PrEx 1.17: 994

FY94 NATIONAL COMMUNICATIONS SYSTEM'S ANNUAL REPORT

PREPARED BY THE OFFICE OF THE MANAGER,
NATIONAL COMMUNICATIONS SYSTEM
FEBRUARY 1995

95-029460

JUL 0 6 1995

FY94 NATIONAL COMMUNICATIONS SYSTEM'S ANNUAL REPORT

PREPARED
BY THE
OFFICE OF THE
MANAGER,
NATIONAL
COMMUNICATIONS
SYSTEM

FEBRUARY 1995

I

FOREWORD

"Emergency Communications for a Changing World..."

The precept of the National Communications System (NCS) embodies the organization's commitment to ensure critical telecommunications in an all-hazards environment. The Nation's national security and emergency preparedness (NS/EP) community increasingly relies on NCS programs and initiatives, especially as the Nation moves toward an integrated, worldwide, information-based future.

Fiscal year 1994 presented the NCS with tremendous change and accomplishment. The NCS responded by strengthening its ability to meet today's needs and challenges while focusing on developing strategic recommendations and solutions for the future. Also, the reality of a declining Federal budget means that NS/EP telecommunications and supporting information systems must be affordable, reliable, flexible, and interoperable.

In response to the Administration's commitment to exploiting information technology, NCS focused a great deal of attention on the developing National Information Infrastructure (NII). NCS is seeking to leverage technologies that improve the ability of the Federal Government to respond to national emergencies. The NCS is able to promote network security, interoperability, reliability, and NS/EP priority treatment by actively participating in the Information Infrastructure Task Force. The NCS is working with the President's National Security Telecommunications Advisory Committee (NSTAC) to improve our NS/EP capabilities within the NII.

The challenges facing the NCS continue to evolve. The NCS advocates the protection of network resources and sensitive information by actively participating in several forums. These forums include the Information Infrastructure Task Force Security Issues Forum, the NSTAC and Government Network Security Information Exchange groups, and the NSTAC's Network Security Standards Oversight Group. NCS is working along with the Defense Information Systems Agency to establish a forum for Federal Government security experts to exchange knowledge about information security.

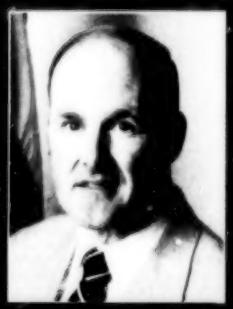
The NCS achieved significant milestones during FY94. For example, the Government Emergency Telecommunications Service (GETS) attained the limited capability phase of its development. It now provides NS/EP users with a dependable, cost-effective, and flexible switched voice and voiceband data communcations service. The GETS architecture has evolved with technology and combines existing features and services of the public switched network with selected NS/EP enhancements.

The future success of the NCS is enhanced by industry and Government partnerships fostered through the cooperation between the President's NSTAC and the NCS interagency structure. The NCS, in partnership with the President's NSTAC, will continue exploring additional methods to ensure that the Nation's communication and information systems are structured to support the needs of this great country into the 21st century.

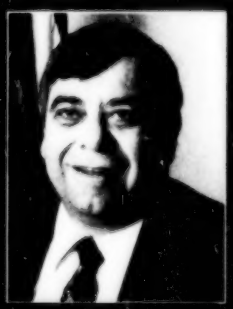
ALBERT J. EDMONDS
Lieutenant General, USAF
Manager

MR. ROBERT M. MARQUETTE
Deputy Manager

COL VICTOR W. BOWSER, USA
Assistant Deputy Manager



DR. DENNIS BODSON
Assistant Manager
Technology and Standards



MR. KENNETH B. BOHEIM
Assistant Manager
Plans and Programs

COL PAUL HAMILTON, USAF
Assistant Manager
Emergency Preparedness

CAPT HARVEY GANNON, USN
Assistant Manager
Joint Secretariat

MR JAMES G. BITTNER
Chief
Financial Management Office

TABLE OF CONTENTS

	Page Number
EXECUTIVE SUMMARY	ES-2
I. INTRODUCTION	1-2
Background	1-2
Report Organization	1-2
Environment Facing the NCS	1-3
NCS Strategic Goal and Objectives	1-4
II. NCS NS/EP TELECOMMUNICATIONS SUPPORT, ACTIVITIES, AND PROGRAMS	
Office of the Manager, NCS, Activities	2-2
Appointment of the Manager, NCS	2-2
Appointment of the Deputy Manager, NCS	2-2
OMNCS Functional Realignment	2-2
Security Activities	2-5
Public Switched Network (PSN) Security	2-5
Information Resources Security	2-6
Industry Support Activities	2-6
The President's National Security Telecommunications Advisory Committee (NSTAC)	2-7
NCS National Information Infrastructure Activities	2-10
Government NS/EP Telecommunications Activities	2-12
NCS Committee of Principals/Council of Representatives and Interagency Coordination and Consultation Activities	2-12
NS/EP Telecommunications Planning	2-15
NS/EP Telecommunications Planning Process	2-15
International Planning	2-19
National Telecommunications Management	2-20
National Coordinating Center for Telecommunications (NCC)	2-20
National Telecommunications Management Structure (NTMS)	2-21
Telecommunications Service Priority (TSP) System	2-24
NS/EP Telecommunications Program Activities	2-26
National Level NS/EP Telecommunications Program (NLP)	2-26

	Page Number
NS/EP Telecommunications Contingency Programs	2-33
Shared Resources (SHARES) High Frequency (HF) Radio Program	2-33
National Transportable Telecommunications Capability (NTTC)	2-33
Emerging NS/EP Telecommunications Programs	2-33
Advanced Intelligent Network (AIN)	2-33
Enhanced Satellite Capability (ESC)	2-35
Enhanced Call Completion (ECC)	2-39
Technology and Standards	2-40
Technology	2-40
Standards	2-46
Administrative Support Activities	2-49
Personnel Support	2-49
Non-NLP Funding	2-51
NCS Information Assets	2-51

	Page Number
III. NS/EP TELECOMMUNICATIONS POLICY AND REGULATORY DEVELOPMENTS	
Executive	3-2
Judicial	3-3
Regulatory	3-4
Legislative	3-5
IV. NS/EP TELECOMMUNICATIONS SUPPORT AND ACTIVITIES OF NCS MEMBER ORGANIZATIONS	
Overview	4-2
NCS Primary Assets	4-2
Department of State (DOS)	4-6
Department of the Treasury (TREAS)	4-7
Department of Defense (DoD)	4-10
Department of Justice (DOJ)	4-15
Department of the Interior (DOI)	4-17
United States Department of Agriculture (USDA)	4-19
Department of Commerce (DOC)	4-21

	Page Number
Department of Health and Human Services (DHHS)	4-28
Department of Transportation (DOT)	4-30
Department of Energy (DOE)	4-40
Department of Veterans Affairs (VA)	4-45
Central Intelligence Agency (CIA)	4-48
The Joint Staff (JS)	4-49
General Services Administration (GSA)	4-51
United States Information Agency (USIA)	4-56
National Aeronautics and Space Administration (NASA)	4-57
Federal Emergency Management Agency (FEMA)	4-61
Federal Communications Commission (FCC)	4-69
Nuclear Regulatory Commission (NRC)	4-71
United States Postal Service (USPS)	4-73
Federal Reserve Board (FRB)	4-76
National Security Agency (NSA)	4-78
National Telecommunications and Information Administration (NTIA)	4-80

	Page Number
V. NS/EP TELECOMMUNICATIONS ISSUES	
Public Switched Network Security	5-2
National Information Infrastructure	5-3
Telecommunications Industry Dependence on Foreign Sources	5-4
APPENDIX A NCS and OMNCS Organizations	A-2
APPENDIX B Appendix to Technology and Standards	B-2
NCS-RELATED ACRONYMS	1

LIST OF EXHIBITS

		Page Number
2-1	President's NSTAC Membership	2-7
2-2	NII Joint Industry/Government Telecommunications Planning Mechanism	2-10
2-3	Proposed NS/EP Capabilities and Features	2-11
2-4	NS/EP Telecommunications Planning Process	2-16
2-5	Operational Elements of the NTMS	2-21
2-6	Current NTMS OC's	2-22
2-7	NTCN Operational Concept	2-23
2-8	GETS Capabilities	2-27
2-9	DEMO 94 Maryland National Guard Test Configuration	2-30
2-10	DEMO 94 Missouri National Guard Site	2-31
2-11	CPS Milestones	2-32
2-12	SHARES HF Radio Stations	2-34
2-13	Current Developing Satellite Systems	2-36
2-14	OMNCS ACTS T1 VSAT Experimentation	2-37
2-15	OMNCS AMT Experimentation	2-38
2-16	Four Potential NS/EP Priority Treatment Service Areas	2-41
2-17	The Global Semiconductor Process Equipment Market	2-42
2-18	Personnel Support From NCS Member Organizations	2-50
3-1	The Information Infrastructure Task Force	3-3
4-1	Department of Commerce Organizational Chart	4-24
4-2	Command, Control, Communications, and Computer (C4) Directorate (J-6)	4-50
4-3	Organization of the General Services Administration	4-52
4-4	NASA Staff Elements Responsible for Nascom, TDRSS, and PSCN	4-58
A-1	NCS Organizational Chart	A-3
A-2	Office of the Manager, NCS	A-5
B-1	X3 Organizational Chart	B-2
B-2	Telecommunications Industry Association Organizational Chart	B-3
B-3	Structure of Committee T-1, Telecommunications (FY94)	B-4
B-4	Paths to International Standards Development	B-5
B-5	Structure of the International Telecommunications Union	B-8
B-6	List of FY94 Technical Information Bulletins and Technical Notes	B-9
B-7	Federal Wireless Policy Committee	B-10
B-8	Federal Telecommunication Standards Status List	B-11
B-9	Family of Telecommunications Infrastructure Standards for User Premises	B-11
B-10	Interim Land Mobile Radio Telecommunications Standards	B-12
B-11	Federal Standards on Meteor Burst Communications	B-12
B-12	Table of Letter Ballots	B-13

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

Pursuant to Executive Order (E.O.) 12472 and National Security Decision Directive (NSDD) 97, this report outlines the activities of the National Communications System (NCS) during Fiscal Year (FY) 1994 in meeting the national security and emergency preparedness (NS/EP) telecommunications objectives of the Federal Government. Major NCS initiatives, plans, and programs, as well as significant internal and external factors affecting the NCS, are reviewed in this report.

ANNUAL REPORT OVERVIEW

OFFICE OF THE MANAGER, NCS, ACTIVITIES

The leadership of the Office of the Manager, NCS (OMNCS), changed hands with the arrival of a new Manager and Deputy Manager. Under its new leadership, the OMNCS continues to address the changing telecommunications environment to respond in the most effective and efficient manner to changing requirements, technologies, and policy initiatives.

Appointment of the Manager and Deputy Manager, NCS

On July 29, 1994, LtGen Albert J. Edmonds, U.S. Air Force, was appointed Manager, NCS, and Director, Defense Information Systems Agency (DISA), replacing LTG Alonzo E. Short, Jr., who retired from the U.S. Army. LtGen Edmonds' previous assignment was Director of Command, Control, Communications, and Computer Systems Directorate (J-6), the Joint Staff.

On January 3, 1994, Mr. Robert M. Marquette assumed the responsibilities of the Deputy Manager, NCS, replacing Mr. Benham E. Morriss, who retired from Government service in June 1993. Previously as a Major General in the U.S. Air Force, Mr. Marquette was Director, Command, Control, Communications, and Intelligence Systems Management Support Office, in the Office of the Assistant Secretary of Defense (C3I).

Office of the Manager, NCS, Functional Realignment

This fiscal year, the OMNCS was realigned to reflect the shifting focus of NS/EP telecommunications, the need for long-range strategic planning, and the need to improve responses to the challenges of change. The following subparagraphs outline specific changes to the OMNCS organization.

Office of Strategic Planning. The Office of Strategic Planning was established on April 1, 1994. Its mission is to assist the Manager, Deputy Manager, Assistant Managers, and representatives of the NCS member organizations in developing future strategies that focus NCS efforts on projects that contribute to the successful accomplishment of the NCS mission.

This office is also responsible for supporting various National Information Infrastructure (NII) initiative task forces and working groups. The Chief of Strategic Planning represents the OMNCS on the NII Reliability and Vulnerability Working Group and chairs its NS/EP Services Subgroup.

During the year, personnel from the Office of Strategic Planning met several times with OMNCS Assistant Managers, NCS member organization representatives, and several NS/EP telecommunications groups to discuss significant NS/EP issues and NII concerns. The purpose of these meetings was to gather information to develop a future strategic direction for the NCS.

Test and Evaluation Office. The Test and Evaluation Office was established within the NCS Office of Plans and Programs. Its mission is to test and evaluate the capability, operational readiness,

interoperability, security, and reliability of current and planned systems to meet NS/EP telecommunications requirements in an operational environment. In performing its mission, the Test and Evaluation Office provides feedback into the *NS/EP Telecommunications Planning Process* by identifying and documenting NS/EP telecommunications shortfalls. During the year, this office performed operational assessments of the Emergency Operations Teams of the National Coordinating Center for Telecommunications (NCC) to evaluate emergency preparedness readiness plans and validate operational procedures.

Training and Exercise Division. The Training and Exercise Division was formed within the NCS Office of Emergency Preparedness to provide a comprehensive training and exercise program in support of the National Telecommunications Management Structure (NTMS). Its primary focus is to train response personnel so that they are able to meet NS/EP telecommunications challenges under the all-hazards environment.

In its first year, the division, the Federal Emergency Management Agency (FEMA), and the General Services Administration (GSA) jointly developed, sponsored, conducted, and participated in several Emergency Response Training Seminars. The Training and Exercise Division was also responsible for testing NCC operational capabilities and conducting a Facilities Protection Tabletop Exercise with the telecommunications industry and three NCS member organizations.

National Telecommunications Management Structure (NTMS). The NTMS Program Office was transitioned from the NCS Office of Plans and Programs to the NCS Office of Emergency Preparedness to provide improved national telecommunications management operations continuity. This move ensures that an umbrella structure exists under which NCC functions can continue under any contingency.

Security Responsibilities. To better reflect the emphasis of standards development on network security issues, network security personnel and responsibilities moved from the NCS Office of the Joint Secretariat to the NCS Office of Technology and Standards.

SECURITY ACTIVITIES

Public Switched Network (PSN) Security

The President's National Security Telecommunications Advisory Committee's (NSTAC) Network Security Information Exchange (NSIE) and Government NSIE groups continue to work together to address issues relating to the security of the public switched network by meeting bimonthly to exchange information. A network security symposium and a workshop on firewalls were held this year to expand the flow of this type of information throughout industry and Government. The Network Security Standards Oversight Group (NSSOG) prepared a report on standards recommendations that will be highlighted during the President's NSTAC meeting in January 1995.

Information Resources Security

In September 1994, the Manager, NCS, approved a plan under which the OMNCS, and the Director, Center for Information Systems Security, DISA, could work together to improve the security of information throughout the Federal Government. Under the plan, the OMNCS will use its existing relationships with the NCS member organizations to coordinate and facilitate a process in which Federal organizations will share security products and knowledge with each other. The process is intended to encourage sharing of compatible security solutions and to reduce the total security costs to the Federal Government.

Automated Information Security (AIS)

The Information Systems Division continues to be active in maintaining the OMNCS Automated Information Systems Security Program. The division developed security plans for NCS operational systems, presented a video about software copyright laws to the OMNCS

staff, and conducted random personal computer security audits.

INDUSTRY SUPPORT ACTIVITIES

The OMNCS continues to provide administrative, technical, and analytical support to the President's NSTAC and other joint industry/Government NS/EP telecommunications working groups.

The President's National Security Telecommunications Advisory Committee (NSTAC)

NSTAC XVI was held on March 2, 1994. The NSTAC's Wireless Services Task Force presented recommendations which were subsequently approved by the NSTAC and forwarded to the President. The NSTAC's various subcommittees examined several issues regarding NS/EP telecommunications policy, including the NII, network security, common channel signaling, and the potential for terrorist or civil disturbance threats to telecommunications facilities.

NATIONAL INFORMATION INFRASTRUCTURE

NCS member organizations and the OMNCS are playing an active and aggressive role by participating in NII working groups to ensure that emerging NS/EP NII concerns are addressed and considered. The Information Infrastructure Task Force (IITF) is working with Federal organizations to develop a consensus on critical implementation and development issues. The OMNCS NII Council was established to better track and focus on the efforts of various industry/Government groups working NS/EP NII issues. A set of recommended NS/EP capabilities and features for the NII was developed by the NS/EP Services Subgroup of the Reliability and Vulnerability Working Group.

GOVERNMENT SUPPORT ACTIVITIES

The OMNCS, NCS Committee of Principals (COP), Council of Representatives (COR), and interagency subcommittees continue to address initiatives, plans, and programs designed to enhance the NS/EP telecommunications of the Federal Government.

NCS Committee of Principals (COP)

COP members reviewed the NCS response to the NSTAC XV Executive Report to the President and NCS issuances concerning NS/EP telecommunications. The NCS response to the Executive Report and several issuances were subsequently forwarded through the Executive Agent, NCS, to the Executive Office of the President (EOP) for consideration. The COP also nominated Federal Government members to the Telecommunications Service Priority (TSP) System Oversight Committee.

NCS Council of Representatives (COR)

The COR reviewed and forwarded the *Communications Resource Information Sharing (CRIS) Initiative Concept of Operations and Implementation Plan* to the COP for consideration. It also reviewed and forwarded changes to NCS Manual 3-3-1, *Shared Resources (SHARES) High Frequency (HF) Radio Program User Manual*, to the COP.

Interagency Subcommittees

The interagency NCS Vision 21 Major Focus Area (MFA) Teams continue to address areas critical to identifying NCS growth and enhancement strategies. Each MFA Team continues to meet periodically to implement its responsibilities, streamline its tasks, and eliminate overlapping responsibilities through coordination activities with other MFA teams.

NS/EP TELECOMMUNICATIONS PLANNING

The OMNCS, in coordination with the NCS member organizations, continues formulating, implementing, and assessing telecommunications plans and programs to enhance NS/EP telecommunications in an all-hazards environment.

NS/EP Telecommunications Planning Process

This year, the final *NS/EP Telecommunications*

Evolutionary Architecture report was developed. An improved *NS/EP Telecommunications Planning Process* was implemented in February 1994 and used to develop several NS/EP telecommunications assessments and reports. The Disaster Field Office Architecture and Veterans Health Administration Architecture development are new tasks that were initiated this year.

NS/EP Telecommunications Network Performance Supporting Analysis

Each year, the OMNCS assesses telecommunications network performance to provide analyses that support the recommendations of *NS/EP Telecommunications Planning Process* documents and the National Level NS/EP Telecommunications Program (NLP). The PSN continues to be analyzed to quantify the effects of various threats to NS/EP telecommunications and to confirm the enhanced performance offered by the NLP.

Supporting activities this fiscal year included development of the FY96 NLP Supporting Analysis, collection and analysis of international network data, development of PSN threat assessments, and development of cost-effective telecommunications models that complement other NCS projects.

NS/EP Telecommunications International Planning

With assistance from the Department of State (DOS), the OMNCS established an international communications project this year. The goal of this project is to ensure international access/egress to critical NS/EP telecommunications. The collection of international transmission and switching system data, along with the development of international topology to support future analysis, began this year.

The OMNCS participates on the North Atlantic Treaty Organization (NATO) Civil Communications Planning Committee (CCPC), its working group, and other subsidiary bodies. Some CCPC activities this year included NATO military approval of a pilot program to lease virtual private networks interconnecting 18 NATO sites, the development of and participation in a communications seminar and exercise, and completion of a revision to the committee's compendium.

NATIONAL TELECOMMUNICATIONS MANAGEMENT

During a crisis, the Federal Government relies extensively on the Nation's NS/EP telecommunications resources. To ensure that NS/EP telecommunications meet national leadership requirements, the NCS oversees the following telecommunications management activities.

National Coordinating Center for Telecommunications (NCC)

The NCC continues to provide industry/Government NS/EP telecommunications operational coordination support during disasters and emergencies. This year, the President issued 36 major disaster declarations and one emergency declaration. The disasters involved NCS regional support to FEMA and the Federal response organizations in nine states. Two events dominated disaster assistance this year: the Northridge earthquake and the flooding of some southern States following tropical storm Alberto.

The National Disaster Medical System (NDMS) activitely participates in many of the Nation's disaster response efforts. To enhance the NDMS emergency response, the NCC coordinated the development of a telecommunications architecture that supports the full range of NDMS mission tasks. The NDMS telecommunications architecture will enhance the response role of the NDMS.

National Telecommunications Management Structure (NTMS)

Fifty-seven operating centers from industry and Government have been established in support of the NTMS. NTMS NS/EP activities this year included training National Emergency Management Team and Regional Emergency Management Team Communications Functional Groups, publishing and distributing three NTMS newsletters, and

procuring applications software/hardware for the development of a Telecommunications Emergency Management System (TEMS). TEMS is being developed to allow efficient exchange of information collected during emergencies or disasters among executive decision makers and NTMS telecommunications managers.

Telecommunications Service Priority (TSP) System

The TSP System continues to facilitate the priority provisioning and restoration of NS/EP telecommunications services. During the past year, the TSP System was an active component of the NCS Emergency Response Training Seminars. The OMNCS provided TSP educational briefings, including a briefing to the State of Florida 911 Coordinator's Conference. The TSP Program Office developed a tool for tracking TSP provisioning priorities, and developed and implemented a bulletin board system to facilitate communications among individuals and organizations involved in the TSP System.

NS/EP TELECOMMUNICATIONS PROGRAM ACTIVITIES

National Level NS/EP Telecommunications Program (NLP)

The programs within the NLP are designed to provide NS/EP users with a robust and survivable emergency telecommunications capability that can be used in an all-hazards environment.

Funding. FY94 NLP funding was provided by the Executive Agent, NCS, as approved by the EOP, to support the Government Emergency Telecommunications Service (GETS), Commercial SATCOM Interconnectivity (CSI), and Commercial Network Survivability (CNS) programs.

In September 1994, the CSI and CNS programs were terminated. Approved FY95 NLP funding for these programs will be used to pay for CSI program termination liabilities, GETS implementation, and to support the activities of a newly established Cellular Priority Service (CPS) program. During FY93 and FY94, portions of the CNS program supported CPS initiatives.

The revised FY96 NS/EP NLP funding proposal contains funding for the GETS program and the introduction of the CPS program as a part of the NLP. In September 1994, the funding proposal was forwarded to the Executive Agent, NCS, for guidance and approval.

Government Emergency Telecommunications Service (GETS). The GETS program is a PSN-based service that is positioned to evolve with the PSN. This year, the OMNCS developed a methodology for generating personal identification numbers (PIN) and created an initial GETS user list. The OMNCS coordinated the implementation of the 710 numbering plan area code in commercial networks, including cellular.

The three interexchange carriers, AT&T, MCI, and Sprint, continue to support the GETS program by providing data about the networks to the OMNCS, recommending technical approaches for processing NS/EP traffic, implementing GETS services within the respective networks, and preparing for initial operating capability by validating implemented GETS services. All three interexchange carriers activated GETS limited capability (LC) on September 30, 1994.

Cellular Priority Service (CPS). A CPS Program Office was established to act as the focal point for NS/EP cellular priority issues. The OMNCS investigated various technical approaches to facilitate universal NS/EP cellular priority access capabilities for NS/EP users and completed an *NS/EP Cellular Access Implementation Plan.*

NS/EP TELECOMMUNICATIONS CONTINGENCY PROGRAMS

Shared Resources (SHARES) High Frequency (HF) Radio Program

The SHARES Program continues to provide a nationwide HF radio network composed of Federal, State, and industry HF resources to support NS/EP

requirements. Forty-six organizations have contributed 1,043 HF radio stations for participation in the voluntary SHARES HF Radio Network. The National Telecommunications Coordinating Network (NTCN) HF capability was incorporated into the SHARES HF Radio Network, thus increasing industry participation in the SHARES Program. SHARES provided operational, on-the-air, emergency message support during the Northridge earthquake and the southeast States' flood disaster.

The SHARES HF Interoperability Working Group continues to expand awareness of SHARES capabilities throughout the emergency response community. It conducted three nationwide readiness exercises and fostered HF radio interoperability through examination of several procedural and technical issues.

National Transportable Telecommunications Capability (NTTC)

NTTC is a rapidly deployable, integrated satellite and cellular telecommunications system. It was maintained in a stand-by mode during FY94. The contract expired on September 28, 1994.

EMERGING NS/EP TELECOMMUNICATIONS PROGRAMS

Advanced Intelligent Network (AIN)

The AIN is an emerging telecommunications technology that has been identified by the OMNCS and the President's NSTAC as having the potential capability to meet the needs of the NS/EP telecommunications community. The AIN Program Office, in coordination with industry and Government, identified a preliminary set of services that can be introduced into NS/EP initiatives such as GETS. Ongoing AIN activities include coordination of AIN-related activities with other OMNCS programs to identify interrelationships and increase synergy between activities. This year, a demonstration of AIN voiceband and AIN integrated services digital network (ISDN) capabilities for GETS applications was developed.

Enhanced Satellite Capability (ESC)

Through the ESC program, the NCS participates with industry and Government in assessing new experimental communications satellite capabilities and technologies that can be applied to support and enhance existing and future NS/EP requirements. Experimentation efforts include working with the National Aeronautics and Space Administration (NASA) to show the benefits and value of an Advanced Communications Technology Satellite (ACTS)-type system to support NS/EP user needs.

The NCS continues to study, analyze, assess, and influence the capabilities of emergency satellite systems (e.g., American Mobile Satellite Corporation, ORBCOMM) that could be used to enhance NS/EP telecommunications service to users. NS/EP experimentation is being developed to perform over these systems as they become operational.

Enhanced Call Completion (ECC)

The report for NSTAC XIV included the results of the ECC Task Force, which identified 23 PSN services or features that could enhance the completion of NS/EP calls. Several of these features are being implemented with the GETS program. Other features can be implemented locally at NS/EP user facilities. It is essential that ECC services or features are also developed and demonstrated to support NS/EP applications as plans for the NII unfold. NCS Vision 21 MFA VI (NII), in coordination with the OMNCS, developed and conducted an *NII Capabilities Survey* to enable NCS member organizations to influence the development of the NII.

TECHNOLOGY AND STANDARDS ACTIVITIES

Technology and Standards

Technology activities focus on workshops, studies, and analyses. Specific technical subjects encompassed the following: wireless services, dependence on foreign sources, modeling, electronic mail (E-Mail), facsimile, high definition

television, multimedia, video teleconferencing, and wide band gap semiconductors. Standards activities focused on development of Federal telecommunications standards and participation in commercial standards development within national and international standards organizations. Specific standards technical focus areas to improve NS/EP telecommunications encompassed the following: narrowband integrated services digital network (ISDN), broadband ISDN with key technologies of asynchonous transfer mode, synchronous optical network, facsimile, multimedia, telecommunications management network, personal communication services, and signaling.

Electronic Mail (E-Mail)

In accordance with NCS Vision 21 MFA II (Interoperability), the OMNCS initiated a pilot project on electronic messaging. The OMNCS performed this project in concert with the GSA's *Reinventing Government Laboratory's Governmentwide E-Mail Pilot Project.*

ADMINISTRATIVE SUPPORT ACTIVITIES

The OMNCS continues to coordinate, control, and maintain records of memoranda of agreement (MOA) relating to personnel and NCS Issuances; maintain NCS information assets; and improve information resource management.

Personnel Support

MOA's between the OMNCS and NCS member organizations regarding personnel support continue to be executed to fill important positions on the OMNCS staff.

The OMNCS Augmentee Program, which includes the National Defense Executive Reserve and the Individual Mobilization Augmentee personnel programs, continues to supplement staffing of the OMNCS in critical Government positions during emergency situations.

NCS Information Assets

NCS Issuance System. The following NCS Issuances were forwarded to the EOP through the Executive Agent, NCS, this year: NCS Directive 4-3, *Interoperability of Telecommunications in Support of National Security and Emergency Preparedness (NS/EP);* NCS Manual 3-3-1, *Shared Resources (SHARES) High Frequency (HF) Radio Program User Manual;* NCS Handbook 3-3-1, *Shared Resources (SHARES) High Frequency (HF) Radio Program Directory, 5th Edition;* and NCS Directive 2-2, *National Level NS/EP Telecommunications Program (NLP) Funding.* The Executive Agent signed NCS Directive 2-1, *National Security and Emergency Preparedness (NS/EP) Telecommunications Planning Process,* in February 1994.

NS/EP Telecom News. The OMNCS continues to publish the *NS/EP Telecom News* on a bimonthly basis to provide its readership with an impact assessment of significant NS/EP telecommunications developments.

NCS Bulletin Board System (BBS). The OMNCS implemented several planned enhancements to the NCS BBS to improve its efficiency. The NCS BBS continues to provide an electronic means of distributing NS/EP telecommunications information to and between the OMNCS and NCS member organizations.

Information Resources Management (IRM). The Information Systems Division worked with DISA's Office of Chief Information Officer and numerous agency working groups to ensure proper administration and compliance on matters regarding information resources. The OMNCS updated the *NCS Information Resources Management Long Range Plan* and made several computer software and hardware upgrades during the year. The division continues to maintain and enhance the NCS Resource Center.

the year. The division continues to maintain and enhance the NCS Resource Center.

NS/EP TELECOMMUNICATIONS POLICY AND REGULATORY DEVELOPMENTS

Several executive, judicial, regulatory, and legislative developments occurred during the fiscal year. The main executive initiatives continued to focus on the development of the NII and the activities of the IITF. Judicial activities revolved around reductions to the Modified Final Judgment restrictions as the result of Regional Bell Operating Companies and congressional pressures.

Specific regulatory areas that were addressed included spectrum allocation for personal communication service licenses, the recharter of the Federal Communications Commission's Network Reliability Council, and several developments at the State level to break up monopolies in the local and intrastate telecommunications markets.

Legislative activities covered the following areas: enhancing competition in the local exchange, allowing telephone and cable company cross-ownership, requiring public access to Federal information via electronic means, and enabling law enforcement agencies to conduct electronic surveillance over the telephone network.

NS/EP TELECOMMUNICATIONS SUPPORT AND ACTIVITIES OF NCS MEMBER ORGANIZATIONS

NCS member organizations continue to upgrade existing networks and consolidate telecommunications services. The posture of NS/EP telecommunications continues to be enhanced through member participation in various internal and external committees that recommend and implement policy changes, work to solve technical concerns, and develop plans and future strategies to fulfill organizational NS/EP requirements.

Submissions to this year's report continue to reflect the importance NCS member organizations place on telecommunications resources that provide uninterrupted performance of essential emergency functions.

NS/EP TELECOMMUNICATIONS ISSUES

NCS member organizations identified the following issues: Public Switched Network Security, the NS/EP implications of the NII, and the long-range effects of the telecommunications industry dependence on foreign sources for high-technology components and systems.

INTRODUCTION

The National Communications System (NCS) consists of 23 member organizations tasked with ensuring the availability of a viable national security and emergency preparedness (NS/EP) telecommunications infrastructure. The NCS assists the Federal Government in serving the critical telecommunications needs of the Nation. It was constituted and given its mission in a Presidential Memorandum signed by President Kennedy on August 21, 1963. The memorandum described a single, unified NCS to be formed by "linking together, improving, and extending, on an evolutionary basis, the communications facilities and components of the various Federal agencies to provide necessary communications for the Federal Government under all conditions ranging from a normal situation to national emergencies and international crises, including nuclear attack."

In April 1984, the signing of Executive Order (E.O.) 12472, *Assignment of National Security and Emergency Preparedness Telecommunications Functions*, changed the mission focus of the NCS from planning and coordinating a single, unified Government communications system to its present mission of assisting the President and the Executive Office of the President (EOP) in exercising wartime and nonwartime emergency telecommunications, and in coordinating the planning for and provisioning of NS/EP communications for the Federal Government under all circumstances.

To successfully fulfill its mission, the NCS is structured to foster interagency cooperation and to serve as a focal point for joint industry/Government NS/EP telecommunications coordination and planning. Administratively, the NCS consists of the Executive Agent, NCS; the NCS Committee of Principals (COP); and the Manager, NCS (See Appendix A for further discussion and corresponding organizational charts). In partnership with the NCS, the President's National Security Telecommunications Advisory Committee (NSTAC) provides industry advice and expertise to the President and the Executive Agent, NCS, on issues and problems related to implementing NS/EP telecommunications policy.

BACKGROUND

The FY94 NCS Annual Report, issued by the Office of the Manager, NCS (OMNCS), in coordination with the COP, summarizes and highlights significant NCS NS/EP telecommunications events, activities, and accomplishments during FY94. The NS/EP telecommunications posture of the Nation, and major NCS interagency initiatives, plans, programs, and significant internal and external factors affecting the NCS are also reviewed in this report.

REPORT ORGANIZATION

This report has five sections, which collectively present the coordinated efforts of the NCS.

- Section I, Introduction, describes the present environment, the major challenges facing the NCS, and the strategic goal and objectives of the NCS.
- Section II, NCS NS/EP Telecommunications Support, Activities, and Programs, summarizes significant NCS industry/Government NS/EP telecommunications initiatives, planning activities, accomplishments, and programs.
- Section III, NS/EP Telecommunications Policy and Regulatory Developments, examines external factors influencing the NCS, including significant executive, judicial, regulatory, and legislative developments affecting NS/EP telecommunications.
- Section IV, NS/EP Telecommunications Support and Activities of NCS Member Organizations,

reviews the NS/EP telecommunications initiatives, planning activities, and accomplishments of the NCS member organizations.

- Section V, NS/EP Telecommunications Issues, details NS/EP telecommunications issues.

ENVIRONMENT FACING THE NCS

The NCS is evolving to meet new and complex challenges. These challenges include the Federal Government and the Nation's reliance on the public switched network (PSN) and on the developing National Information Infrastructure (NII). Environmental forces add to the complexity of these challenges, most notably, declining Federal expenditures, the evolving threat (e.g., electronic intrusion, terrorist, natural disaster), and the rapid emergence of new information technologies. The NS/EP telecommunications community must address these factors in planning for a wide range of emergency contingencies.

The NII initiative, as envisioned by the Clinton Administration, is intended to exploit advances in information technology to improve national competitiveness, alter the way Government delivers services to the citizen, enhance the delivery of health care services, and expand educational opportunities. In this context, the NCS perspective is to leverage these information technologies to improve the Federal Government's ability to respond to an all-hazards environment. In this vein, the NCS role in the evolving NII is to ensure that NS/EP telecommunications requirements are considered in developing standards, defining needed services, instituting policies and legislation, developing acquisition guidelines, and providing research and development fiscal incentives.

Specifically, the NCS is seeking to define and promote NS/EP features that should be available to Government users on the NII. These features include priority information exchange, priority service provisioning and restoration procedures, emergency broadcast capability, a sustainable NS/EP coordinating mechanism, assured and reliable service, and network security. As NS/EP features are defined and developed, the NCS promotes the enhancements by hosting technical demonstrations and symposia in coordination with the President's NSTAC.

Interoperability, security, and reliability continue to be pressing issues for the NCS as they relate to the evolving NII. In relationship to interoperability, multimedia exchange among Federal Government users is taking on greater importance. Consequently, NCS responsibilities are expanding from telecommunications to information exchange and transfer (e.g., electronic mail [E-Mail], interactive databases). The NCS is pursuing multimedia exchange interoperability through the development of standards and architectures based on those standards. To facilitate interagency NS/EP telecommunications and information requirements, the NCS is seeking partnerships and alliances to ensure that NS/EP interoperability proposals are considered and that the products and services resulting from these efforts are made readily available to the NS/EP telecommunications community.

Along with interoperability, security and reliability are of paramount importance in the development of the NII. Users of public networks (e.g., industry, Government, individuals) are increasingly dependent on information technologies to complete day-to-day business functions. Users expect that NII services and applications are protected from electronic intrusion, are easily available, and offer reliable sustainable service regardless of the situation. This latter requirement is particularly critical for NS/EP telecommunications users during crises and emergencies when rapid information exchange assists the decision-making process that ultimately results in providing a rapid, coordinated NS/EP response. To address this dimension of security and reliability, the NCS is supporting the Information Infrastructure Task Force's (IITF) Security Issues Forum and the NII Reliability and Vulnerability Working Group (RVWG).

The changing world environment, highlighted by the dissolution of the Soviet Union,

presents complex challenges for the United States as a world leader. As a result, the United States has taken on a greater global role in responding to regional contingencies. United States' humanitarian and diplomatic efforts, as exemplified by programs conducted in Haiti, Rwanda, and Somalia, typify the varied political challenges present in the post-Cold War world. Within the NCS, the National Coordinating Center for Telecommunications (NCC) ensures a flexible response to these global contingencies by initiating, coordinating, and restoring NS/EP telecommunications services.

In responding to the challenge of change, the NCS is becoming more accessible to the NS/EP community through its active solicitation of NS/EP telecommunications and information requirements that enhance essential emergency functions. It has become more responsive through the establishment of a strategic goal and objectives that are guiding the NCS into the 21st century.

NCS STRATEGIC GOAL AND OBJECTIVES

The NCS strategic goal and objectives are intended to position the NCS to be capable of adapting to and focusing on the rapidly changing geopolitical and threat environment, while supporting those NS/EP requirements that allow the NCS to migrate and respond to the all-hazards threat environment. The primary goal of the NCS is to ensure that a survivable, enduring, and effective telecommunications infrastructure is in place to fulfill NS/EP requirements throughout the full spectrum of emergencies.

Within this primary goal, the NCS is to develop, implement, and maintain interoperable, supportable, and cost-effective technical and management programs that meet the requirements of the EOP, the Executive Agent, NCS, and NS/EP users across the full spectrum of emergencies. Specific objectives for the future include:

- Ensure that, as the NII develops, NS/EP requirements are an integral part of the overall concept.
- Evaluate new technologies for potential application to NS/EP requirements.
- Implement a comprehensive testing, training, and exercise program to assess the readiness of NCS programs.
- Ensure that departments and agencies have access to all necessary telecommunications and information infrastructures required to manage crises/emergencies.
- Ensure that NS/EP requirements are introduced into commercial standards fora so that emerging standards provide the necessary interoperability, reliability, and security.
- Assist in the development of a policy on information security, and then design programs that will implement that policy.
- Foster strong working relationships among the NSTAC members, the NCS member organizations, and NII advisory groups to ensure that the President and the Executive Agent, NCS, receive the best possible advice and support.
- Ensure that NCS plans and programs consider NS/EP requirements overseas.

As the NCS and the Nation vigorously prepare for the arrival of the 21st century, existing joint industry/Government and interagency mechanisms put the NCS in a unique position to meet and respond to wide-ranging challenges of change. The expertise provided through vital partnerships with industry and Government ensures that the mission of the NCS remains consistent with the Administration's objectives and provides an efficiently managed, interoperable, reliable, and secure NS/EP telecommunications and information infrastructure that supports NS/EP mission requirements.

II. NCS NS/EP TELECOMMUNICATIONS SUPPORT, ACTIVITIES, AND PROGRAMS

This section summarizes significant NCS industry/Government NS/EP telecommunications initiatives, planning activities, accomplishments, and programs.

OFFICE OF THE MANAGER, NCS, ACTIVITIES

The OMNCS continues to conduct activities in accordance with the increasing focus on emergency communications. To better position itself to address the changing environment and the challenges of change, the Office of Strategic Planning was established. The Test and Evaluation Office was created to conduct independent assessments of emergency preparedness exercises involving the NCC. The Training and Exercise Division was formed to ensure that a trained group of response personnel is prepared to meet all-hazards telecommunications exigencies. The following paragraphs outline in more detail the changes to the OMNCS, including the appointment of a new Manager and Deputy Manager.

APPOINTMENT OF THE MANAGER, NCS

On July 29, 1994, LtGen Albert J. Edmonds, U.S. Air Force, was appointed Manager, NCS, and Director, Defense Information Systems Agency (DISA), replacing LTG Alonzo E. Short, Jr., who retired from the U.S. Army. LtGen Edmonds' previous assignment was as Director of Command, Control, Communications, and Computer Systems Directorate (J-6), the Joint Staff.

APPOINTMENT OF THE DEPUTY MANAGER, NCS

Mr. Robert M. Marquette assumed the responsibilities of the Deputy Manager, NCS, on January 3, 1994, replacing Mr. Benham E. Morriss, who retired from Government service in June 1993. As a Major General in the U.S. Air Force, Mr. Marquette was previously Director, Command, Control, Communications, and Intelligence Systems Management Support Office, in the Office of the Assistant Secretary of Defense (C3I).

OMNCS FUNCTIONAL REALIGNMENT

Office of Strategic Planning

The Office of Strategic Planning was established on April 1, 1994. The mission of this office is to assist the Manager, Deputy Manager, Assistant Managers, and representatives of the NCS member organizations in developing the future NCS strategy. The development of this strategy will require examining many factors that are driving change in the NCS, such as the expanding threat, declining budget, and emerging technologies. This office is also responsible for providing support to NII task forces and working groups. Specifically, the Office of Strategic Planning represents the NCS on the RVWG and chairs its NS/EP subgroup. The major accomplishments of this office during FY94 include:

- Selected a strategic planning process
- Developed a work plan for the *NCS Strategic Plan*

- Developed the *Strategic Planning Data Collection Work Book* for the *NCS Strategic Plan*

- Interviewed NCS Principals and OMNCS Assistant Managers

- Defined NS/EP functional requirements for the evolving NII.

Operational NCS Exercise and Training Support

The OMNCS continues to plan, provide, and evaluate training and exercises to ensure the expeditious handling of NS/EP telecommunications under an all-hazards environment. The OMNCS functional realignment included the creation of the OMNCS Test and Evaluation Office and the Training and Exercise Division, which are described below.

Test and Evaluation Office. During FY94, the former Contingency Programs Office reorganized to establish the OMNCS Test and Evaluation Office. The transition process and the accompanying redesignation of mission, goals, and objectives culminated in implementation of the NS/EP Telecommunications Test and Evaluation Program. The Test and Evaluation Office derives its mission authority from E.O. 12472, and is further emphasized by NCS Vision 21 Major Focus Area (MFA) goals. The mission of the OMNCS Test and Evaluation Office is to:

- Test and evaluate the capability, operational readiness, interoperability, security, and reliability of current and planned systems to meet NS/EP telecommunications requirements in an operational environment

- Identify and document shortfalls to provide a baseline for recommending corrective action and/or feedback to the NCS NS/EP Telecommunications Planning Process.

Specific objectives for the Test and Evaluation Office are to:

- Assess, validate, and report on:

  — Operational suitability and readiness
  — Systems interoperability and security
  — Performance, as defined by functional requirements.

- Conduct systems management, operation procedures, and training programs:

  — Identify shortfalls and recommend solutions
  — Speed integration through testing
  — Provide essential information for decision making
  — Provide independent test and evaluation support for NCS training and exercises
  — Maintain the NS/EP Telecommunications Test and Evaluation Program Plan
  — Develop and coordinate test and evaluation plans and requirements
  — Facilitate integration of capabilities into the NS/EP telecommunications architecture
  — Prepare, conduct, analyze, and evaluate test and evaluation activities
  — Identify program resources for planning.

During FY94, the OMNCS Test and Evaluation Office conducted independent assessments of emergency preparedness exercises (EXERCISE WASATCH and National Telecommunications Management Structure [NTMS] 94A) involving the NCC in an NTMS Response Level 1 emergency. These events provided scenarios to assess and validate operating procedures of the Initial Response Teams (IRT) and the Emergency Operations Teams (EOT).

The first event, EXERCISE WASATCH, was based upon response to telecommunications disruption caused by an earthquake disaster in the Midwest. The second event, NTMS 94A, focused on response to telecommunications disruptions caused by a series of terrorist incidents and a resultant disaster.

The Test and Evaluation Office will continue

these independent assessment and validation activities in conjunction with scheduled exercises in FY95. Each exercise will build on the results of preceding exercises and will inject additional training and assessment/validation objectives.

Training and Exercise Division. In FY94, the Training and Exercise Division was formed. The division provides a comprehensive training and exercise program in support of the NTMS, for both internal and external customers. In collaboration with the Federal Emergency Management Agency (FEMA) and the General Services Administration (GSA), the division develops, implements, and assesses training and exercise programs across the full spectrum of NTMS telecommunications response and recovery operations.

The division also conducts internal evaluations. The primary objective is to have a trained cadre of response personnel prepared to meet all-hazards telecommunications exigencies. The goal is to ensure that the OMNCS can meet its operational objectives in a rapid and professional manner.

Accomplishments during the year included:

- Conducted Emergency Response Team (ERT) seminars in Philadelphia, Pennsylvania (Region III), February 1994; Denver, Colorado (Region VIII), May 1994; and Oakland, California (Region IX), August 1994. These seminars are designed to provide emergency response personnel with an overview of the *Federal Response Plan,* focusing on the role and interactions of *Emergency Support Function (ESF) 2 (Communications).* These seminars were jointly developed and sponsored by FEMA, GSA, and the OMNCS.

- Conducted EXERCISE WASATCH to test NCC operational capabilities. The exercise included industry and Government team members. A second exercise, NTMS 94-A, was conducted as a follow-up on the lessons learned from EXERCISE WASATCH.

- Conducted a Facilities Protection Tabletop Exercise with the telecommunications industry, Department of Justice (DOJ), the Department of Defense (DoD), and FEMA.

- Developed the objectives and events for RESPONSE '95.

- Developed a 5-year draft exercise plan.

- Began a review of software for an OMNCS personnel training database.

- Developed an OMNCS training resource center where team members can review or check out materials on NCC operations.

The Training and Exercise Division continues to plan for the following FY95 activities:

- Completing the initial phase of ERT outreach activities

- Developing and implementing phase 2 of the ERT seminars

- Participating in the ESF 2 portion of the FEMA-sponsored exercise, RESPONSE '95

- Developing and conducting quarterly OMNCS training/exercise activities

- Developing and conducting the communications portion of the North Atlantic Treaty Organization's (NATO) Communications Management Exercise '95

- Developing and conducting a facilities protection exercise with the telecommunications industry and other Federal and State Government bodies

- Developing and conducting the OMNCS Continuity of Operations Plan (COOP) Exercise

- Exploring additional external exercise opportunities with the telecommunications industry and other Federal agencies.

SECURITY ACTIVITIES

Security remains an issue of paramount importance to the telecommunications industry and NCS member organizations, especially in the context of the evolving NII. As a result, the OMNCS, in coordination with NCS member organizations and the President's NSTAC, continues to address security of the PSN and initiated a new program for information systems security.

PUBLIC SWITCHED NETWORK (PSN) SECURITY

In 1990, the Chairman of the Policy Coordinating Committee for National Security Telecommunications and Information Systems (PCC-NSTIS) of the National Security Council (NSC) directed the Manager, NCS, to determine what actions were needed by the industry and Government to ensure the availability of critical NS/EP communications despite the threat to the PSN from computer intruders. The Government's concerns regarding PSN security focus on computer intruders gaining unauthorized access to PSN software and databases, thereby possibly affecting NS/EP telecommunications users. Specifically, the focus is on intrusions that could result in denial or interruption of service to NS/EP users, or in the extraction of sensitive data from network elements.

During FY94, industry and Government continued to address the network security problem together. Senior industry and Government executives continue to place a high priority on mitigating the risks to the PSN.

The activities in network security have been concentrated on information exchange, through the Network Security Information Exchange (NSIE) process, and security standards through NSTAC's Network Security Standards Oversight Group (NSSOG). The NSTAC and Government have established separate but closely coordinated NSIE groups. The NSIE groups meet jointly approximately every 2 months to provide a forum for identification and exchange of issues involving computer intruder attacks on and vulnerabilities of network software and databases affecting NS/EP telecommunications.

During FY94, the NSIE groups sponsored two activities to share information regarding the security of the PSN with telecommunications industry organizations and Government agencies not represented on the NSIE groups. The first was a 3-day Network Security Symposium held in February 1994, at which over 240 participants were provided information about the threat to the PSN from computer intruders, actions being taken by industry to address the problem, efforts of law enforcement organizations in the United States and overseas to identify and prosecute computer intruders, and the importance of standards to the security of the PSN.

The NSIE groups also sponsored a Workshop on Firewalls for NS/EP Communications in June 1994. The workshop was designed to provide technical managers and staff in the telecommunications industry and Government organizations with current information on strategies and technologies for protecting networks or network elements connected to the Internet. More than 220 people attended this workshop.

The NSIE groups continued efforts to bring about changes in laws relating to computer crimes to better protect the PSN against computer intruders. The NSIE groups concluded that current laws do not provide a sufficiently strong deterrent to computer intruders who invade or damage computer systems supporting the telecommunications infrastructure. On October 1, 1993, the Executive Agent, NCS, forwarded the Government NSIE's recommendation to the Assistant to the President for National Security Affairs. A similar recommendation by the industry NSIE was included in the NSTAC chair's report to the President on NSTAC XV. On September 23, 1994, the Assistant to the President for National Security Affairs provided the President's guidance on implementing the recommendation to the Attorney General.

The NSSOG's activities during FY94 focused on identifying major security standards issues that needed to be addressed. Twelve issues have been identified and will be included in the NSSOG's report, which is to be presented to the NSTAC in January 1995. The National Institute of Standards and Technology (NIST), as the Government's focal point for the NSSOG, participates in this process. The OMNCS, which is responsible under E.O. 12472 for the Federal Telecommunication Standards Program (FTSP), also participates in NSSOG meetings through the NCS Office of Technology and Standards.

In support of the network security process, the OMNCS sponsored a number of studies and research efforts intended to improve the security of the Nation's telecommunications infrastructure. These studies included an assessment of the threat to the PSN by computer intruders; a research and development (R&D) project to develop a computer software tool to analyze maintenance changes to large computer programs, such as controlling switches in the PSN; studies to evaluate network firewalls; and providing guidance to organizations connecting to large networks such as the Internet. Specifically, in support of the NSIE process, the OMNCS coordinates the collection and analysis of PSN software incident and vulnerability data.

In addition, the NCC performs an Alert, Warning, and Recovery function for network security. Under an arrangement with the NSIE groups, the NCC receives and disseminates certain network security information to the NSIE groups and the NS/EP community.

INFORMATION RESOURCES SECURITY

In September 1994, the Manager, NCS, approved a plan under which the OMNCS, and the Director, Center for Information Systems Security, DISA, could work together to improve the security of information throughout Government. Under the plan, the OMNCS will use its existing relationships with the NCS member organizations to coordinate and facilitate a process in which Federal organizations will share security products and knowledge with each other. The process is intended to encourage sharing of compatible security solutions and to reduce the total security costs to the Government. A workshop, being sponsored by the IITF Government Information Technology Services (GITS) Working Group and supported by the OMNCS, DISA, NIST, and GSA, for sharing solutions to today's information security programs is being planned for March 1995.

Automated Information Security (AIS)

The Information Systems Division was active in maintaining the OMNCS AIS program to ensure integrity of the organization's systems and the heightened awareness of the staff.

Major accomplishments for the AIS program during FY94 included:

- Annual submission of the latest security plans for NCS operational systems to the computer security office of DISA
- Revision and publication of the OMNCS Office Order for classified computer operations, which was last published in 1989
- Presentation of a video on software copyright laws to the OMNCS staff
- Annual recertification of stand-alone computers for classified operations
- Quarterly random personal computer security audits for conformance to AIS policies and regulations.

INDUSTRY SUPPORT ACTIVITIES

The NCS serves as a focal point for joint industry/Government planning. Through the OMNCS, in conjunction with the NCS member organizations, the NCS continues to provide administrative, technical, and analytical support to the President's NSTAC, industry/Government groups developing the NII, and other joint

industry/Government NS/EP telecommunications planning groups.

THE PRESIDENT'S NATIONAL SECURITY TELECOMMUNICATIONS ADVISORY COMMITTEE (NSTAC)

The President's NSTAC consists of 27 (up to 30 are authorized) senior corporate leaders (typically chief executive officers) representing major telecommunications industry carriers, manufacturers, information systems providers, and aerospace firms (Refer to Exhibit 2-1). Established by E.O. 12382 in September 1982, the NSTAC provides advice and expertise to the President and the Executive Agent, NCS, on issues and problems related to implementing NS/EP telecommunications policy. The NSTAC's Industry Executive Subcommittee (IES) and its working groups, task forces, and other subordinate groups analyze NS/EP telecommunications issues and report their activities and recommendations to the NSTAC for consideration and forwarding to the President.

NSTAC XVI

The 16th meeting of the President's NSTAC was held March 2, 1994, at the Department of Commerce. During the meeting, the NSTAC's Wireless Services Task Force and the IES presented reports on pertinent NS/EP issues. A summary of recommendations and IES reports is provided in the paragraphs below.

NSTAC Wireless Services Task Force Recommendations.

The following NSTAC Wireless Services Task Force recommendations were subsequently approved by the NSTAC and forwarded to the President:

EXHIBIT 2-1

President's NSTAC Membership

Mr. Lester M. Alberthal, Jr.	Chairman, President, and Chief Executive Officer, Electronic Data Systems
Mr. Robert E. Allen	Chairman of the Board and Chief Executive Officer, AT&T
Mr. C. Michael Armstrong	Chairman and Chief Executive Officer, Hughes Aircraft Company
Mr. Norman R. Augustine	Chairman and Chief Executive Officer, Martin Marietta Corporation (NSTAC Chairman)
Mr. Stanley C. Beckelman	President, Boeing Information Services
Mr. Kent M. Black	Executive Vice President and Chief Operating Officer, Rockwell International Corporation
Mr. Bobby A. Boaldin	Second Vice Chairman of the Board, U.S. Telephone Association
Mr. Bruce R. Crockett	President and Chief Executive Officer, Communications Satellite Corporation
Mr. D. Travis Engen	Executive Vice President, ITT Corporation
Mr. William T. Esrey	Chairman and Chief Executive Officer, Sprint Corporation (NSTAC Vice Chairman)
Mr. Louis Gertsner	Chairman and Chief Executive Officer, International Business Machines Corporation
Mr. Joseph T. Gorman	Chairman and Chief Executive Officer, TRW, Inc.
Mr. John T. Hartley	Chairman, President, and Chief Executive Officer, Harris Corporation
Dr. George H. Heilmeier	President and Chief Executive Officer, Bell Communications Research, Inc.
Mr. William J. Hilsman	Chairman and Chief Executive Officer, InterDigital
Mr. Royce J. Holland	President and Chief Operating Officer, MFS Communications Company, Inc.
Mr. William R. Hoover	Chairman and Chief Executive Officer, Computer Sciences Corporation
Mr. Charles R. Lee	Chairman and Chief Executive Officer, GTE Corporation
Mr. Craig O. McCaw	Chairman and Chief Executive Officer, McCaw Cellular Communications, Inc.
Mr. Richard D. McCormick	Chairman and Chief Executive Officer, US West, Inc.
Mr. John D. McMahon	President, Lockheed Missiles and Space Systems Group
Mr. John M. Mitchell	Vice Chairman, Motorola, Inc.
Mr. Bert C. Roberts, Jr.	Chairman and Chief Executive Officer, MCI Communications Corporation
Mr. Charles E. Robinson	Chairman and Chief Executive Officer, Pacific Telecom, Inc.
Mr. Roy Merrills	Chairman of the Board, Northern Telecom, Inc.
Mr. Roy A. Wilkens	President, Williams Telecommunications, Inc.
Mr. Albert F. Zettlemoyer	President, Government Systems Group, Unisys Corporation

- Continue to pursue implementation of a single nationwide wireless priority access capability for NS/EP users that is:
  - — Transparent to the NS/EP user for PSN access
  - — Interoperable across service boundaries
  - — Composed of multiple levels of priority
  - — Consistent with Telecommunications Service Priority (TSP) categories and criteria
  - — Developed using the NSTAC industry/Government collaborative process.
- Expand the *Federal Response Plan ESF 2* planning process to:
  - — Include representatives of the U.S. telecommunications industry
  - — Encompass an "all-hazards" approach, making more effective use of wireless technologies and services
  - — Periodically update ESF 2.

Industry Executive Subcommittee (IES) Activities and Reports

The IES and its subordinate groups briefed the NSTAC on the below issues affecting NS/EP telecommunications.

Network Security. The Network Security Steering Committee (NSSC) updated its network security risk assessment showing significant evidence of vulnerability reduction activities along with some significant new concerns about threats. Following the success of the first Network Security Symposium held February 6-8, 1994, the NSSC and Government cosponsored another joint industry/Government symposium focused on firewall technologies. The NSSOG and both NSTAC and Government NSIE groups continued their respective efforts to strengthen network security research and development exchange between the telecommunications industry and the Government.

Common Channel Signaling (CCS). As telecommunications technology continues its rapid advancement in intelligent networks, it increasingly relies on the dependable operation of CCS networks. Certain conditions have been postulated that might disrupt CCS networks, such as penetrations by electronic intruders, software faults in elements used by multiple carriers, and physical disruptions from natural disasters. These concerns, combined with the actual occurrence of several CCS outages 2 years ago, stimulated industry and Government to address the likelihood of major PSN outages attributable to CCS disruptions.

The PSN is made up of interconnected networks of many different companies. Most of these networks are becoming increasingly dependent on the supporting CCS networks, which are data networks that set up and terminate call connections. The CCS Task Force addressed concerns about the potential for long-duration, widespread outages of the PSN that could be attributable to signaling system 7 (SS7) network disruptions.

The CCS Task Force extensively queried experts from service providers and manufacturers about potential CCS vulnerabilities and concluded that CCS networks were sufficiently diverse and reliable to preclude the possibility of a major network outage, and that a significant amount of industry interaction was occurring to further enhance CCS network reliability.

To guarantee an absolutely failsafe network with unlimited capacity would not be economical or technically feasible. However, the task force concluded that it was unlikely that a disrupting condition in CCS networks would propagate with a cascading effect across network boundaries and cause a long-duration, widespread outage in the PSN. Based on the CCS Task Force report, the

President's NSTAC charged the IES to:

- Deactivate the CCS Task Force
- Monitor the CCS reliability issue for 1 year by:
  - —Examining available industry performance reports for unfavorable network trends
  - —Reviewing progress of other reliability enhancing steps discussed in the *CCS Task Force Final Report*
  - —Following through on tabletop restoration exercises
  - —Reporting findings to the IES.

Protection of Critical Telecommunications Facilities. In response to the April 1992 Los Angeles riots and the February 1993 New York World Trade Center bombing, the Operations Working Group's NS/EP Panel began working with numerous Federal, State, and local government officials to draft a report on how to protect critical telecommunications facilities during civil disturbances.

The report, published in April 1994, emphasizes the need to develop advanced plans, establish points of contact at all levels of Government, coordinate response plans, and participate in emergency response exercises and training programs. Additionally, the NS/EP Panel was tasked by the IES to monitor the CCS networks' reliability for 1 year, and to study the impact of the Northridge earthquake on telecommunications facilities, services, and network performance.

Regulatory Issues. The IES's Funding and Regulatory Working Group (FRWG) worked with the NCS Legal Counsel to address the potential regulatory issues arising from the implementation of enhanced call completion features. The NCS Legal Counsel and the FRWG drafted a letter from the Office of the Manager, NCS, asking the Federal Communications Commission (FCC) for advice on the legality of granting priority access to NS/EP calls. The FCC is considering the request.

The FRWG is also addressing several potential regulatory issues identified by the NII Task Force (NIITF) from among the following areas: spectrum management, international competition and market access, joint network planning, standards, and proposed legislation affecting the *Communications Act of 1934*.

National Information Infrastructure (NII). On behalf of the President's NSTAC, the NIITF accepted the mandate to address information security and network reliability as conferred by Dr. John Gibbons, Director of the Office of Science and Technology Policy (OSTP) on behalf of the President, and subsequently specified in *The National Information Infrastructure: An Agenda for Action*. The NIITF established three subgroups to coordinate activities directly with the Administration's IITF and its committees.

The NIITF initiated an ongoing dialog with the Administration's IITF committees regarding the NS/EP implications of the NII initiative. The NIITF focused its deliberations in the areas of security, interoperability, dual-use applications, industry trends, and Government technology. More specifically, the task force agreed to provide industry's NS/EP perspective on the difficult balance between the competing goals of universal access and legitimate privacy and security concerns. The task force will continue to cooperate and exchange ideas with all entities involved in the development and implementation of the NII. In addition, it will fulfill its responsibility to provide quality advice to the President concerning NS/EP telecommunications and information issues.

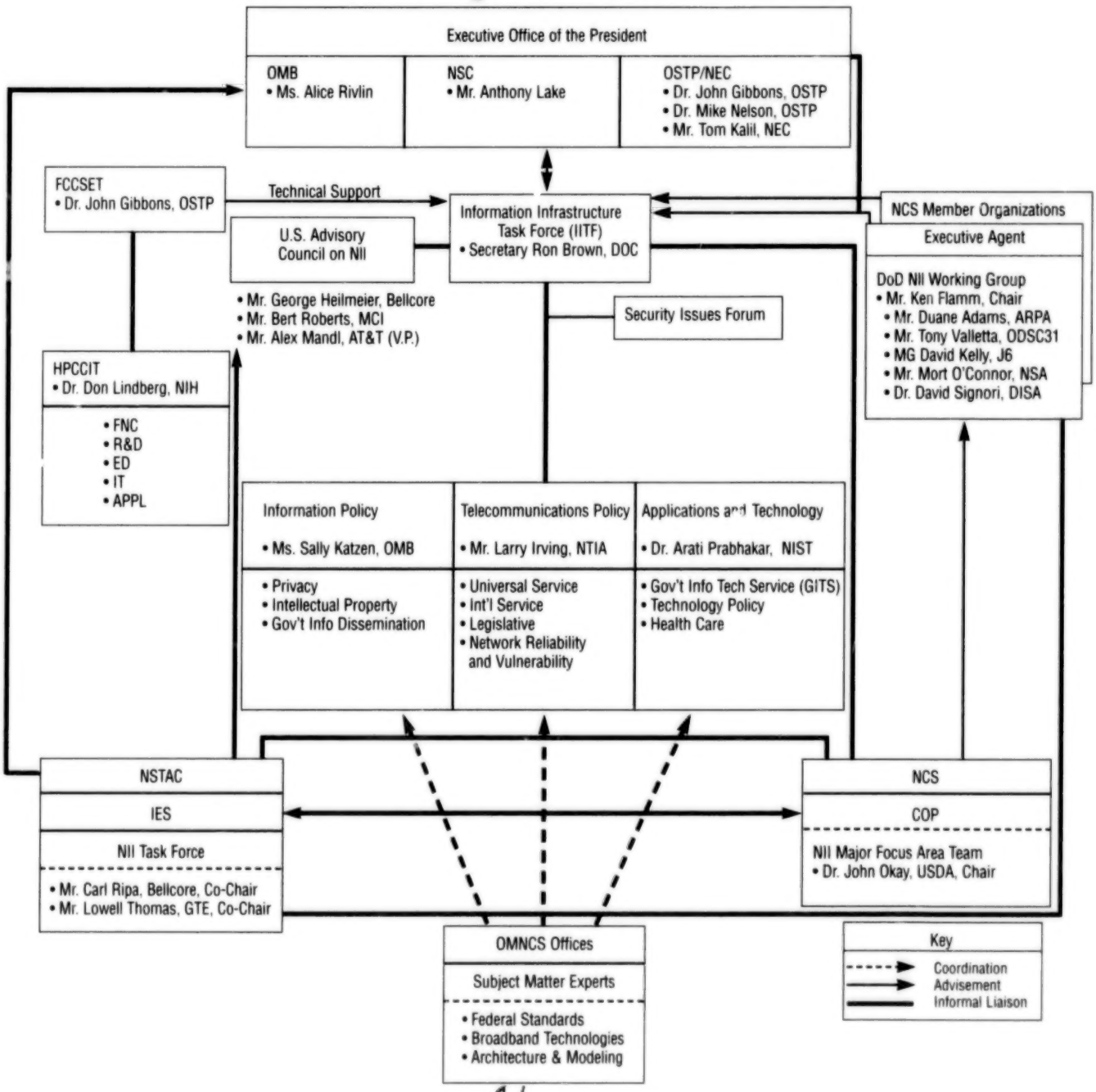
National Information Infrastructure Symposium. The IES-OMNCS-COP Ad Hoc Issues Group met to discuss an invitation from the Naval War College in Newport, Rhode Island, to participate in a joint industry/Government NII Symposium. Subsequently, the group met to distill specific issues to be addressed at the symposium, which is to be held October 17-19, 1994.

NCS NATIONAL INFORMATION INFRASTRUCTURE ACTIVITIES

The NII initiative is a vision that will revolutionize the way individuals and institutions within our society relate to one another by enabling them to work together and access, generate, store, process, transmit, and receive any information, anywhere and anytime. In July 1993, the Federal Government established the interagency IITF to identify changes in Government telecommunications and information policy needed to accelerate the evolution of today's private and public information

EXHIBIT 2-2

NII Joint Industry/Government Telecommunications Planning Mechanism



infrastructure and services in the NII of the 21st century, and to promote development of NII applications to enhance health care, education and life-long learning, manufacturing, and electronic commerce. A primary Government concern is to work with industry to ensure that the evolving NII and its services remain reliable and survivable to support both normal and emergency Government operations.

A joint industry/Government telecommunications planning mechanism, which is already in place, is being used to address reliability and survivability issues for the NII and is shown in Exhibit 2-2. NSTAC, NCS member organizations, and the OMNCS are playing active and assertive roles through this mechanism to ensure that NS/EP concerns are addressed in the emerging NII.

The OMNCS NII Council was established to better track and focus the efforts of the OMNCS in its support to the NII development process. The council is chaired by the Assistant Deputy Manager, NCS, and consists of OMNCS Assistant Managers and staff who support the various NII working groups and subgroups. The council tracks efforts and provides a forum for sharing information and for providing a focal point for directing OMNCS activities in meeting NII NS/EP goals and objectives. Described below are key NII activities in which the OMNCS is involved.

The NCS, in coordination with NSTAC, is tasked to work with the NII RVWG to ensure that NS/EP needs are accommodated in the NII. The RVWG, formed under the IITF's Telecommunications Policy Committee, is a key working group in which NS/EP concerns are being addressed. The RVWG is chaired by the Deputy Director, DISA, and receives significant support from the NCS member organizations. The RVWG established three subgroups: Protection of Network Subgroup, Reliable Services Subgroup, and NS/EP Services Subgroup.

The NS/EP Services Subgroup is chaired by the OMNCS. Its members include representatives from the Central Intelligence Agency (CIA), Department of State (DOS), DoD, FEMA, and GSA. The subgroup, in coordination with the NSTAC NIITF Architecture Subgroup, developed a set of recommended NS/EP capabilities and features necessary for the NII to meet NS/EP requirements. The list of capabilities and features is presented in Exhibit 2-3.

EXHIBIT 2-3

Proposed NS/EP Capabilities and Features

Priority Information Exchange: The capability to recognize authorized NS/EP users and provide end-to-end priority treatment for the transmission of voice and data information.

Priority Service Provisioning & Restoration Procedures: A process that requires and legally authorizes vendors to initiate, modify, and restore telecommunications and information services for NS/EP customers on a priority basis.

Emergency Broadcast Capability: The capability to provide emergency information to the public via imagery, data, voice, or other means.

Sustainable Coordinating Mechanism: An all-hazard industry/Government management mechanism to ensure NS/EP telecommunications and information services are available to support mitigation, response, and recovery efforts.

Interoperable Service: The ability for authorized NS/EP users to effectively exchange information independent of device and network.

Protected Information Support: The capability to accommodate user-encrypted information.

Assured and Reliable Service: Quality telecommunications and information service available for authorized NS/EP users whenever and wherever it is needed.

Network Security: Protection against unauthorized physical or electronic intrusions, manipulations, or attacks, preserving end-to-end integrity of the network and transmitted information.

In an effort to assist in the dissemination of these definitions and to explain their importance, the OMNCS developed the *NII NS/EP Story Briefing*. Using a disaster scenario as a backdrop, each capability and feature is demonstrated in the briefing in terms of its importance to emergency response activities. Additionally, the NS/EP Services Subgroup is working within the NIITF Architecture Subgroup to assess whether current networks satisfy the features and capabilities.

The NCS Regulatory Counsel supported the IITF Telecommunications Policy Committee in the preparation of legislative proposals to the Senate Commerce Committee for consideration during

discussions of telecommunications-related legislation. Participation in this forum is key in influencing legislative drafting efforts. Additionally, the NCS Regulatory Counsel represents NS/EP interests in the Universal Service Working Group and the International Services Working Group. The OMNCS also supports the efforts of the IITF Security Issues Forum.

OMNCS activities in support of the IITF Committee on Applications and Technology, GITS Working Group, include several key leadership functions. As a member of the GITS subgroup, Customer Services Improvement Team, the OMNCS has accepted the tasking as the Office of Primary Responsibility to chair a group to work with private industry to advance the implementation of technologies that provide citizen access to Government information services. Additionally, the OMNCS has accepted the tasking to support the Office of the Secretary of Defense (OSD) in fostering industry/Government partnerships in support of NS/EP requirements.

The OMNCS has taken on a key support role function within the Federal Wireless Policy Committee (FWPC). Through the coordinated efforts of industry and NCS, NS/EP requirements have been accepted for the first revision of the FWPC's wireless requirements document. The OMNCS was formally requested to lead priority access work efforts.

MFA VI serves as the focal point for NII activities of the 23 NCS member organizations. It is through the coordinated efforts of the NCS that the NS/EP requirements for the NII may be articulated and successfully implemented.

GOVERNMENT NS/EP TELECOMMUNICATIONS ACTIVITIES

The active participation of the NCS member organizations is vital to the success of the NCS. The involvement of these organizations in the COP/COR process, the interagency subcommittees, and NCS Vision 21 ensures that the Federal departments and agencies are involved in developing NS/EP telecommunications programs and activities. The OMNCS coordinates activities, including off-sites, special meetings, and information briefings to keep the member organizations abreast of current NS/EP telecommunications activities.

NCS COMMITTEE OF PRINCIPALS/COUNCIL OF REPRESENTATIVES AND INTERAGENCY COORDINATION AND CONSULTATION ACTIVITIES

The NCS COP is the interagency group that provides advice and recommendations on NS/EP telecommunications plans, programs, and activities. These recommendations are submitted to the EOP through the Executive Agent, NCS, for guidance and approval. The COP established the COR as a permanent, subordinate group to address detailed NS/EP telecommunications issues. Together, these groups fulfill the requirement to conduct unified planning as described in E.O. 12472 by addressing the complex NS/EP telecommunications needs of the 23 NCS member organizations.

Summary of Committee of Principals Interagency Activities

The COP conducted the following activities:

- Reviewed and forwarded the NCS response to the *NSTAC XV Executive Report to the President*
- Forwarded NCS Directive (NCSD) 4-3, *Interoperability of Telecommunications in Support of National Security and Emergency Preparedness (NS/EP),* to the Executive Agent, NCS
- Forwarded a revised NCSD 2-2, *National Level NS/EP Telecommunications Program (NLP) Funding,* to the Executive Agent, NCS
- Approved changes to NCS Manual (NCSM) 3-3-1, *Shared Resources (SHARES) High Frequency (HF) Radio Program User Manual*

- Nominated Federal members to the TSP System Oversight Committee, who were subsequently appointed by the Manager, NCS.

The COP deliberated on major NS/EP telecommunications programs and activities, including the following:

- **Communications Resource Information Sharing (CRIS) Initiative.** The COP provided significant input during the development of the *CRIS Concept of Operations and Implementation Plan.* The CRIS Working Group submitted the plan to the COP; it was approved.

- **Network Security of the PSN.** The COP periodically examines activities in standards research and development, industry and Government NSIE groups, and other network security programs.

Summary of Council of Representatives Interagency Activities

As directed by the COP, the COR undertook the following NS/EP telecommunications activities:

- Reviewed changes to NCSD 2-2, *National Level NSEP Telecommunications Program (NLP) Funding,* and recommended that the COP consider the changes for approval

- Participated on the CRIS Working Group and forwarded the *CRIS Concept of Operations and Implementation Plan* to the COP for consideration

- Forwarded changes to NCSM 3-3-1, *Shared Resources (SHARES) High Frequency (HF) Radio Program User Manual,* to the COP for consideration

- Facilitated COP consideration of TSP System Oversight Committee membership nominations.

Activities of Interagency Subcommittees

The interagency subcommittees established by the COP/COR address issues and concerns demanding a high degree of analysis and discussion. By devoting efforts to a specific NS/EP telecommunications matter, each subcommittee focuses on generating viable recommendations for coordination by the NCS. Interagency subcommittee activities and accomplishments are discussed below.

- **The SHARES HF Interoperability Working Group** continues to maintain and exercise the SHARES capability, and to foster interoperability of Federal HF radio systems through examination of several procedural and technical issues. In January, the working group commemorated its 100th formal meeting. Three SHARES nationwide readiness exercises were conducted to provide training on SHARES message formatting and radio operating procedures. The working group updated and distributed the 1994 edition of NCS Handbook (NCSH) 3-3-1, and published the third edition of NCSM 3-3-1.

  In addition, the working group continues to address a number of HF radio interoperability issues. The use of existing HF technology to provide an automated interface between HF radio systems and the PSN, utility of HF propagation software programs, the application of new HF antennas, and the feasibility of the *SHARES Coordination Concept* and SHARES HF Bulletin Board System (BBS) were all under evaluation by the working group during FY94. The working group also continues the registration of Federal Automatic Link Establishment (ALE) address codes to preclude possible interference when operating HF ALE equipped systems.

- **The CRIS Working Group** was formed as a result of the NCS Vision 21 MFA II (Interoperability) Team's identification of a need to develop a recommended approach and

framework for identifying and maintaining a compendium of communications assets. Following the approval by the COP of the *CRIS Concept of Operations and Implementation Plan,* a CRIS Development Working Group was established. The working group held its first meeting in June to carry out MFA II recommendations.

NCS Vision 21

NCS Vision 21 is a Total Quality Management (TQM) process, established by the COP, focusing on the NCS purpose, mission, and vision into the next century. Yearly, off-sites are held to reaffirm the purpose, mission, and vision statements, as well as the direction of the NCS. Five MFA teams were initially created to identify NCS growth and enhancement strategies, and to resolve issues. Since that time, MFA III — FOCUS — completed its charter; the supporting conditions of MFA IV — PROCESS — were subsumed by the remaining MFA's; and a new MFA VI — NATIONAL INFORMATION INFRASTRUCTURE — was created. Listed below are the activities and accomplishments of the current MFA's.

- **MFA I — NCS PROCESS/SERVICES** — in coordination with the OMNCS, initiated luncheon meetings between small groups from the COP and the Deputy Manager, NCS, to facilitate communication within the NCS community. In addition, the EOP approved the revised NS/EP Telecommunications Planning Process, developed by MFA I in coordination with the OMNCS. The revised process was implemented this year. MFA I continues to monitor the process to identify problem areas, assess its efficiency, and develop recommendations to refine the process.

- **MFA II — INTEROPERABILITY** — developed a survey questionnaire to ascertain the electronic mail (E-Mail) and database capabilities of NCS members. The survey information was provided to the member organizations and the OMNCS along with recommendations for improving E-Mail capabilities. Information gathered from the survey was used to improve the daily electronic transfer of information between NCS member organizations and the OMNCS.

- **MFA V — IMAGE** — organized and conducted an Emergency Planners Seminar, which was held on November 1, 1993.

- **MFA VI — NATIONAL INFORMATION INFRASTRUCTURE** — developed and distributed an *NII Capabilities Survey* to ascertain NCS member organization requirements as the NII develops. The results of the survey will be used as a basis for addressing NS/EP telecommunications issues in several NII forums.

Each MFA team continues to meet periodically to implement supporting condition actions, streamline tasks, and eliminate overlapping responsibilities through coordination of activities with the other MFA's. The chairpersons of the MFA's (Goalkeepers) constitute an executive board that meets quarterly to manage the overall objectives of the Vision 21 initiative and report the collective status of the MFA's work to the COP.

COP/COR Special Meetings

Two special meetings were held on April 11 and July 19, 1994, to explain Government Emergency Telecommunications Service (GETS) usage funding and billing procedures to the NCS member organizations. During the July meeting, a general agreement on billing and funding of GETS usage was approved by the COP/COR members.

Information Presentations

COP/COR members received the following informational briefings:

- OSTP briefed on the NII and encouraged NCS participation in the development of the NII.

- The National Telecommunications and Information Administration (NTIA) presented a briefing on the emerging *Telecommunications Act of 1993* and its impact on NS/EP telecommunications.

- Bellcore presented an information briefing on the NS/EP implications of having a new administrator for the North American Numbering Plan.

- The NCC provided updates on Northridge earthquake support.

- The FCC provided a briefing on telephone interference and its impact on NS/EP telecommunications.

- The National Security Agency (NSA) briefed on MOSAIC, a program to provide value-added security services for unclassified, but sensitive information.

- The Department of the Treasury (TREAS) and DOJ provided a briefing on the formation of the Federal Law Enforcement Wireless Users Group (FLEWUG).

- GSA briefed on the Telecommunications Ordering and Pricing System (TOPS).

- The NCS Office of Strategic Planning presented the *NII NS/EP Story* briefing.

- FEMA briefed on the National Emergency Coordination Network.

NS/EP TELECOMMUNICATIONS PLANNING

The NCS serves as a focal point for joint industry/Government NS/EP telecommunications planning activities. As such, the NCS conducts unified planning to coordinate the development and maintenance of an effective and responsive NS/EP telecommunications capability for meeting the requirements of the Federal Government under all circumstances as embodied in E.O. 12472.

Unified interagency planning includes coordination with the NCS member organizations' planning activities. It also includes the management and use of Government, commercial, and private sector telecommunications to establish and maintain a national telecommunications infrastructure that incorporates the necessary combination of hardness, redundancy, mobility, connectivity, interoperability, restorability, and security to obtain the survivability of NS/EP telecommunications in an all-hazards environment.

NS/EP TELECOMMUNICATIONS PLANNING PROCESS

Under the auspices of the NCS Vision 21 MFA I (NCS Process/Services) Team, composed of the NCS member organizations and OMNCS representatives, an improved *NS/EP Telecommunications Planning Process* was implemented this year.

The improved process is designed to accomplish eight specific planning objectives:

- Define operational and functional objectives

- Identify special technical and operational requirements

- Identify telecommunications requirements of the Federal Government based on NS/EP user needs

- Identify the capabilities required to support NS/EP telecommunications needs

- Identify a set of feasible national level NS/EP initiatives to achieve identified capabilities

- Define and effectively implement approved national level NS/EP telecommunications programs and enhancements

- Establish an architecture that guides integration and interoperability of NS/EP telecommunications capabilities

- Analyze planned/emerging technologies and assess the implications they may have on NS/EP telecommunications strategies.

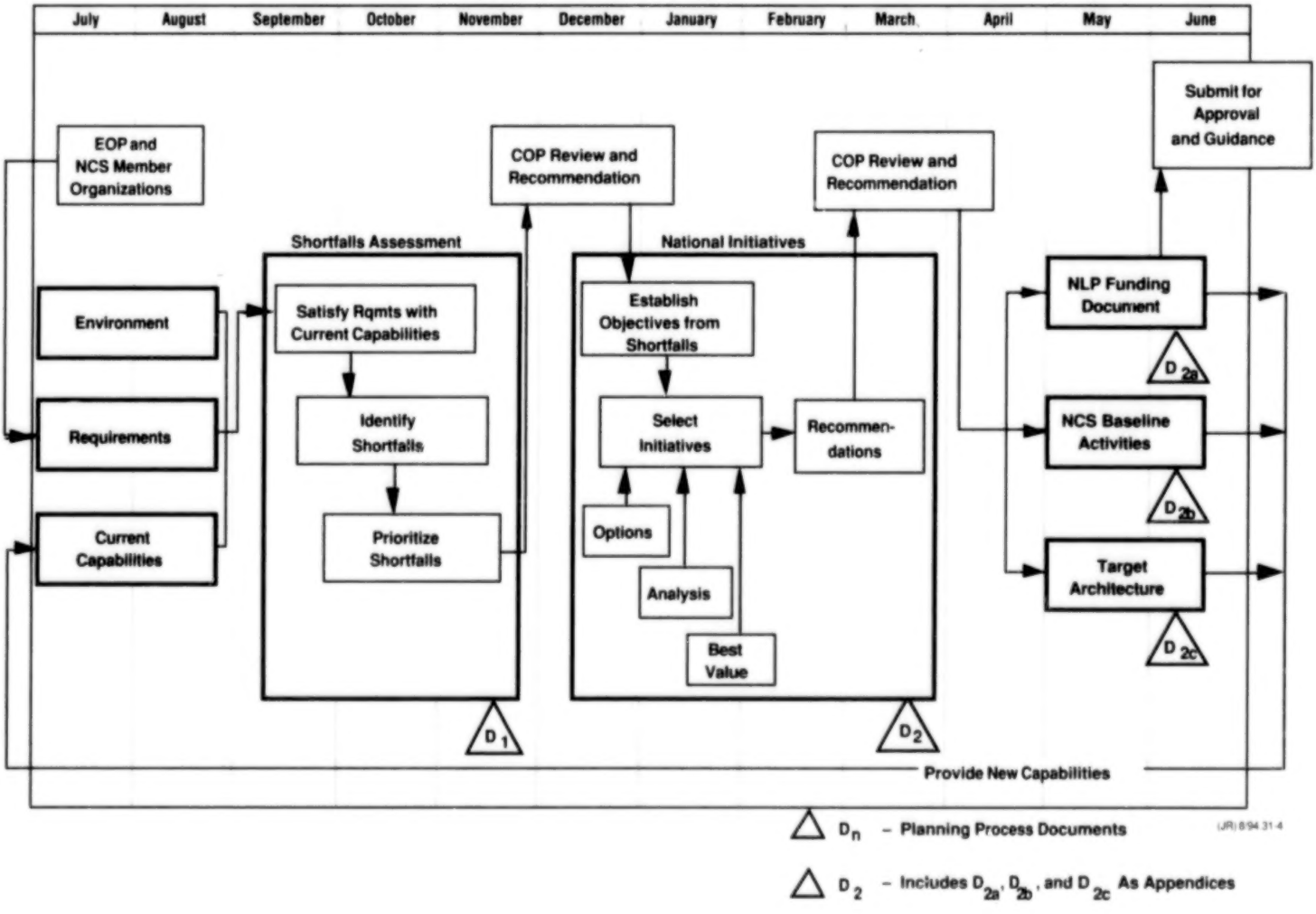
To attain these objectives, the planning process provides a framework that focuses on the performance of supporting source activities and five key planning elements. Exhibit 2-4 depicts the improved *NS/EP Telecommunications Planning Process* and its key planning elements. To ensure the systematic development, review, and approval of key planning elements within an annual cycle, continuous planning is carried out within the framework by the NCS member organizations through the NCS COP, COR, and interagency subcommittees; the OMNCS; and the Executive Agent, NCS.

This year, in the first complete cycle of the improved planning process, several reports were produced and presented to the COP for consideration and forwarding to the Executive Agent, NCS, for approval and guidance. The reports identified national telecommunications shortfalls; proposed national level initiatives to mitigate identified shortfalls and enhance NS/EP telecommunications; proposed funding for the FY96 NLP; and recommended national initiatives for inclusion as NCS baseline activities not included in the NLP.

The *FY94 NS/EP Telecommunications*

EXHIBIT 2-4

NS/EP Telecommunications Planning Process



Shortfalls Assessment, dated February 9, 1994, identified and prioritized NS/EP shortfalls such as limited intraregional connectivity during a crisis, wireless network congestion, and lack of adequate PSN security.

In the *FY94 NS/EP Telecommunications National Initiatives Report*, dated June 24, 1994, several recommendations for national initiatives, such as augmenting connectivity in the local loop, establishing wireless priority treatment for NS/EP telecommunications, and defining NS/EP requirements for high-speed services and applications, were identified.

The evolving structure of NS/EP telecommunications resources, coupled with the capabilities to satisfy approved functional requirements, is contained in the *Target Architecture,* dated June 24, 1994. This architecture provides for the design, evaluation, integration, and implementation of the NS/EP telecommunications initiatives described in the *FY94 NS/EP Telecommunications National Initiatives Report*. The architecture is continually refined to evolve current capabilities towards a set of architecture goals. Through each iteration, it serves an important function in providing a target for current planning and a baseline for subsequent planning activities. The evolving *Target Architecture* fulfills the requirement in E.O. 12472 to develop and recommend an evolutionary telecommunications architecture.

In addition to the above accomplishments, NS/EP telecommunications planning process activities included:

- Collecting and analyzing NS/EP requirements
- Identifying agencies' baseline NS/EP activities and ongoing plans and elements that expand each NS/EP activity
- Identifying risks to NS/EP telecommunications
- Addressing the National telecommunications infrastructure in conjunction with the NII
- Considering Internet implications and issues in an NS/EP environment
- Identifying issues concerning interoperability among NS/EP organizations during a disaster
- Identifying and analyzing issues in the transition from CCS SS7 to broadband signaling
- Considering the benefit of using interactive multimedia technology in the NS/EP environment
- Designing and specifying enhancements to communication networks
- Planning the implementation of approved NCS baseline activities
- Coordinating, publishing, and distributing the *FY93 NCS Annual Report*
- Initiating the development of a Disaster Field Office (DFO) Architecture to support FEMA and the *Federal Response Plan* for improving information exchange, and facilitating coordination among ESF's, ESF national resources, and State and local governments
- Initiating development of a telecommunications architecture to support the Emergency Medical Preparedness Office of the Department of Veterans Affairs (VA)
- Recommending optimization of networks based on quantitative analysis and performance modeling.

NS/EP Telecommunications Network Performance Supporting Analysis and Assessment

The OMNCS assesses telecommunications network performance each year to provide analyses that support the *NS/EP Telecommunications Planning Process,* the *Target Architecture*, and the NLP. Each

year, the OMNCS analyzes the PSN, which includes the networks of the interexchange carriers (IEC) and the local exchange carriers (LEC), to quantify the effects of various threats to NS/EP telecommunications and to confirm the enhanced performance offered by the NLP. OMNCS activities included developing the *FY96 NLP Supporting Analysis,* PSN threat assessments, international network data collection and analysis, and cost-effective telecommunications model development.

- The *FY96 NLP Supporting Analysis* improved previous analyses by expanding to address several additional significant issues. NCS efforts in the area of telecommunications reliance in times of stress focused on the evaluation of the benefits associated with implementing the NLP in terms of logical and physical connectivity and periods of network congestion. The ability to quantify a variety of threats to NS/EP telecommunications on both a national and regional basis was also included in the evaluation. The development of a regional vulnerability model that evaluated the effect of various regional threats on the PSN, coupled with the ability to measure the detrimental effect of network congestion on the telecommunications infrastructure, clearly demonstrated that the NCS is recognizing and adapting to a changing threat environment. The network congestion/connection modeling methodology was codeveloped by the NCS Offices of Technology and Standards, and Plans and Programs, and was adapted to analyze the effects to regional outages and focused overloads.

- In the assessment of threats to NS/EP telecommunications, the *FY96 NLP Supporting Analysis* continues to identify the changing threat environment. The *Summary of the Threat to NS/EP Telecommunications* analysis documented hostile intelligence collection, terrorism, unconventional warfare, information and electronic warfare, and nuclear (strategic and limited) threats, as well as the threat posed by natural and technological hazards. *The Electronic Intrusion Threat to NS/EP Telecommunications* analysis provides a baseline description of the threat posed by members of the computer underground to the PSN and its associated telecommunications.

- Efforts continued on improving the capability of the OMNCS to determine the impact of natural disasters on NS/EP telecommunications. In particular, the precision of the Earthquake Damage Assessment Model was improved. The detailed effects of network congestion caused by damage and overloads were analyzed using the improved model. Data collected from FCC outage reports was analyzed with extreme value analysis and Bayesian statistics to determine the risk of loss of telecommunications due to natural hazards.

  Current efforts include synthesizing the approach into a cost-effective NS/EP natural hazard telecommunications model that will achieve the precision necessary in high-risk areas and ascertain a general Continental United Stateswide (CONUS-wide) risk assessment of the loss of NS/EP telecommunications due to natural hazards.

- In the area of methodology development, significant achievements included development of cost-effective modeling methodologies that assist other NCS projects. Specifically, modeling methodologies were developed to evaluate the performance of broadband networks and to measure the contribution of wireless communications.

- The OMNCS Office of Analysis participated in and contributed technical support to the efforts of the Alliance for Telecommunications Industry Solutions (ATIS), the Network Reliability Steering Committee (NRSC), and the Network Reliability Council (NRC).

INTERNATIONAL PLANNING

International Communications Project

E.O. 12472, along with correspondence from the NSC, established a need for survivable international communications. In responding to this policy guidance and with assistance from DOS, the OMNCS established an International Communications Project. The project officer is a DOS detailee from the Diplomatic Telecommunications Service Program Office. The primary goal of this project is to ensure international access/egress to critical NS/EP applications and services under peacetime, as well as stress situations, including:

- Civil Emergencies
- National Disasters
- Humanitarian Relief Operations
- Military Operations (Contingency)
- Diplomatic Initiatives
- Intelligence Activities
- Head of State to Head of State Communications.

The objectives of this project are to:

- Identify vulnerabilities and assess risks associated with international access/egress to NS/EP applications and services

- Influence the availability of global, robust, and survivable international access/egress to NS/EP communications through close interaction with industry, foreign governments, and NCS member organizations

- Develop recommendations for enhancing international access/egress to NS/EP applications and services.

As an initial step, with the support and participation of industry, the OMNCS began a data collection effort to identify all major commercial international switching and transmission systems connecting the United States to the rest of the world. The results of this effort will be published in a document titled *International Switching and Transmission System Topology*.

To date, all IEC international switching centers, international undersea cable systems, and international earth stations have been identified. Efforts continue to identify the quantity of international trunks from the international switching centers, the signaling system, and transmission media used to the distant end.

North Atlantic Treaty Organization (NATO) Civil Communications Planning Committee (CCPC)

The OMNCS/NCC represents the United States on the NATO CCPC, its working groups, and other subsidiary bodies. The DOS detailee to the OMNCS/NCC is the Head of Delegation. CCPC purview extends to telecommunications and postal services. The OMNCS/NCC accordingly consults closely with U.S. commercial entities that provide telecommunications services and affected U.S. Government agencies and organizations. The CCPC met in Plenary Session in Brussels, Belgium, twice during this reporting period.

Some of the major CCPC FY94 activities and accomplishments included:

- NATO military authorities approved a pilot program in which they will lease a virtual private network to interconnect approximately 18 NATO sites in Europe and North America. The purpose of the program is to demonstrate cost savings while increasing capabilities over military-owned and -operated private systems. Once installed, the pilot program will operate for approximately 2 years.

- Completed new telecommunications crisis management arrangements that reflect the realities of the current political and economic status within NATO, central European countries, and eastern European countries.

- Developed and participated in a communications seminar and exercise designed to update appropriate personnel and test them on new crisis management procedures.

- Developed and published NATO guidance for use by members of the Alliance in the privatization and liberalization of public telecommunications networks.

- Published a paper on the European mobile communications capability and its use in supporting NATO military activities.

- Completed a total revision of the committee's Compendium.

- Continued to develop a scheme to provide selected telecommunications subscribers with preferential treatment for use in the international public switched networks.

The CCPC mission, functions, and role in NATO affairs were studied to determine their relevance and usefulness to the Alliance in the current NATO environment. As in the past, it was agreed that the CCPC was an extremely useful organization. The NATO military authorities wanted to incorporate the CCPC functions within the NATO reorganization. It was determined, however, at least for the present, that the CCPC should remain as a part of the Senior Civil Emergency Planning Committee where it could best fulfill its civil oriented missions and support the military on an as-required basis. As in the past, the CCPC remains very active and has an ambitious work program for the period from 1995 through 1996.

United States/Canada Civil Emergency Planning Committee

The OMNCS/NCC engaged in international emergency telecommunications planning with the United States/Canada Civil Emergency Planning Committee for Telecommunications and the United States/Canada Civil Emergency Consultative Group.

The United States/Canada Civil Emergency Planning Committee for Telecommunications reviewed and revised its *Terms of Reference* and changed the name of the committee to United States/Canada Civil Emergency Planning Telecommunications Advisory Group. The United States/Canada Civil Emergency Planning Consultative Group approved the revised Terms of Reference for the Telecommunications Advisory Group.

International Assistance. The NCC continued to provide international assistance to U.S. operations in support of the United Nations, NATO, and other national interests. The NCC processed multiple requests for services in support of operation RESTORE HOPE/CONTINUE HOPE (second project in Somalia), as well as operations SUPPORT DEMOCRACY and SEA SIGNAL (Haitian and Cuban programs).

NATIONAL TELECOMMUNICATIONS MANAGEMENT

The Federal Government is increasing its reliance on NS/EP telecommunications during national and international crises as a means of expediting Federal response efforts. The National Telecommunications Management, through its operational elements, continues to be the focal point for the Government's expanding NS/EP telecommunications and information activities. The following paragraphs highlight significant activities and accomplishments of the National Telecommunications Management operational elements.

NATIONAL COORDINATING CENTER FOR TELECOMMUNICATIONS (NCC)

The NCC assists the NCS member organizations in initiating, coordinating, restoring, and reconstituting NS/EP telecommunications services or facilities under the all-hazards concept. Through their partnership, industry and Government collaborate to expedite operational coordination support for NS/EP requirements during national and international crises.

The following companies are telecommunications industry members of the NCC: AT&T, Bellcore, COMSAT, GTE, ITT Metro Media, Martin Marietta, McCaw Cellular Communications, MCI, MFS Telecom, Inc., Pacific Telecommunications, Inc., U.S. Telephone Association, and Sprint.

The President declared 36 major disasters

and one emergency declaration this fiscal year. They involved NCS regional support to FEMA and the Federal response organizations in 25 States. Additionally, the President approved 20 Fire Suppression Grants to aid fire fighting in 9 States. Two events dominated disaster assistance during this period: first, the January 17, 1994, Northridge earthquake, which struck southern California; and second, the flooding in the States of Georgia, Alabama, and Florida after tropical storm Alberto in July 1994.

The Northridge earthquake was the first significant test of the *Federal Response Plan* procedures since the plan was reviewed after Hurricane Andrew and the reorganization of FEMA. Dedicated industry and Government personnel ensured that response and recovery efforts had adequate telecommunications support. Extensive support was provided to the DFO complex consisting of four buildings, 21 Disaster Application Centers (DAC), 11 Earthquake Service Centers, multiple teleregistration centers, and the Disaster Medical Assistance Teams of the National Disaster Medical System (NDMS). This disaster demonstrated the significance of earthquake mitigation efforts within the telecommunications industry. Lessons learned from this major disaster were documented in the *Northridge Earthquake After-Action Report* published in June 1994 by the joint industry/Government Northridge Earthquake Task Force.

The impact on the PSN from the record-breaking floods in the South after tropical storm Alberto was relatively minor. Two small central offices were taken out of service due to flood waters. Restoration or alternative routing ensured that customers had some means of communicating until normal service was restored.

FEMA continues to make greater use of its communication capabilities and personnel in support of Federal response and recovery efforts. Lessons learned during this disaster situation aided in the review of the *Federal Response Plan*, the *National Plan for Telecommunications Support in Non-Wartime Emergencies*, and the procedures used by the NCC, FEMA, and GSA to meet emergency preparedness obligations.

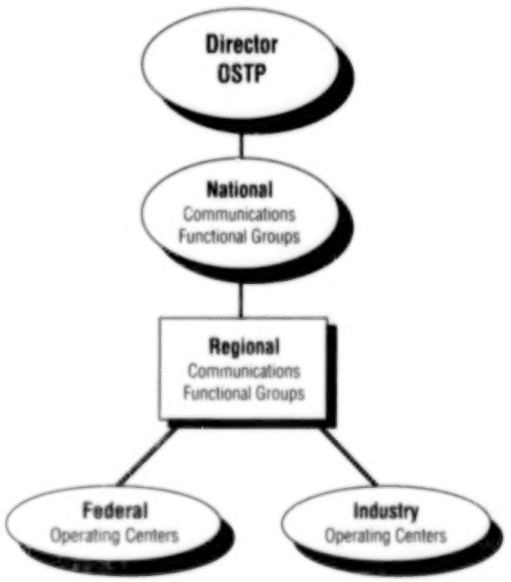
NATIONAL TELECOMMUNICATIONS MANAGEMENT STRUCTURE (NTMS)

The NTMS provides a comprehensive, survivable, and enduring management capability for initiating, coordinating, restoring, and reconstituting the telecommunications resources of the Nation. The NTMS provides an umbrella structure under which the functions performed by the NCC can continue throughout any contingency. The NTMS consists of a cadre of emergency telecommunications managers from both industry and Government, taking policy direction and guidance from the Director, OSTP. Exhibit 2-5 shows how the NTMS organizes during national security emergencies, the highest contingency to which the NTMS responds. Currently, 57 Operating Centers (OC) from industry and Government have been established. Exhibit 2-6 shows the current NTMS OC locations and participating organizations.

Since receiving tasking in June 1993 from the Director, OSTP, the OMNCS continues with the implementation of the NTMS and has taken "steps necessary, within current budgetary guidance, to

EXHIBIT 2-5

Operational Elements of the NTMS



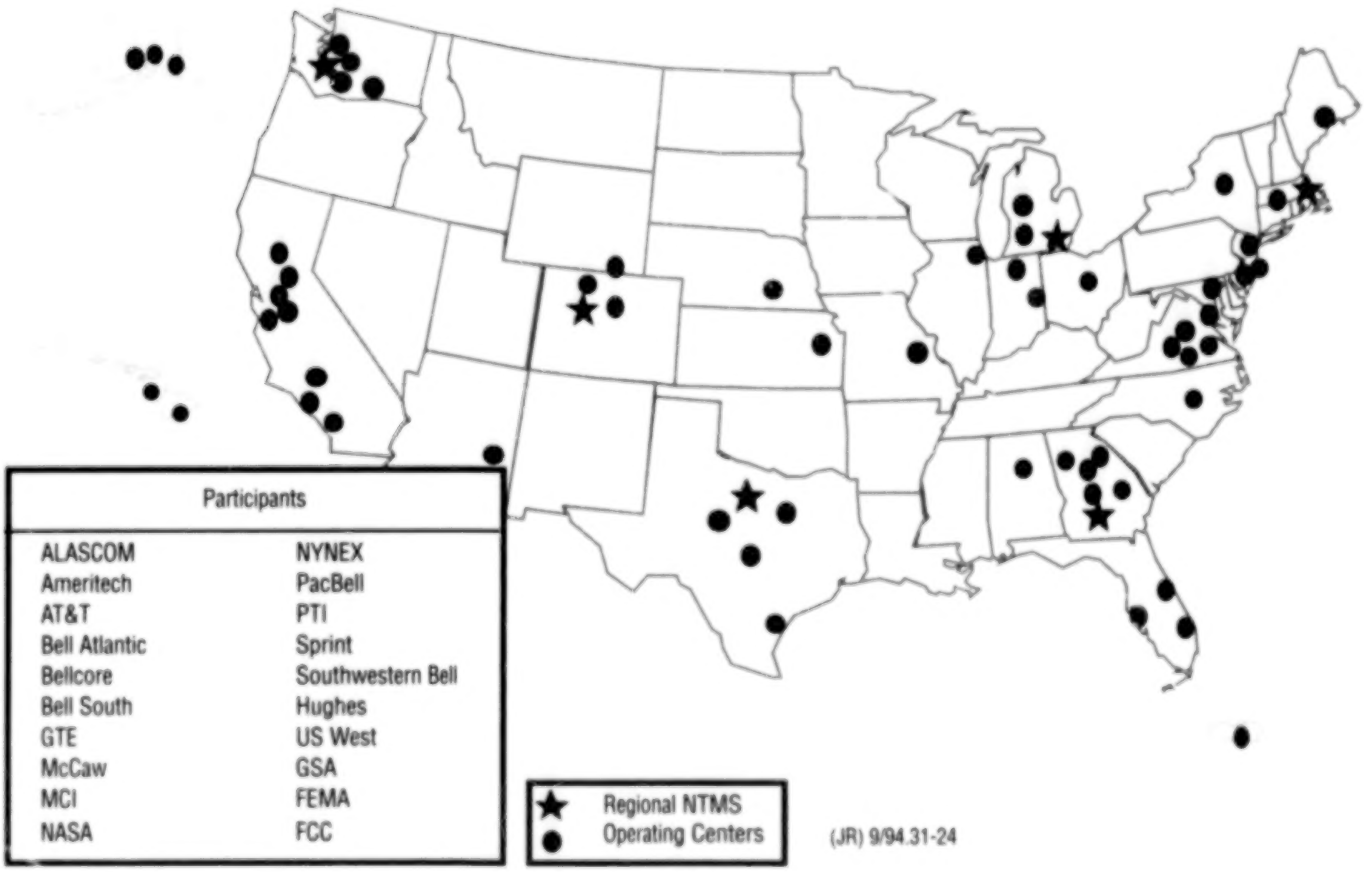
enhance the NTMS to ensure a flexible, integrated response capability to manage the Nation's telecommunications assets across the full spectrum of domestic and national security emergencies." To that end, the OMNCS examined issues and actions associated with enhancing the NTMS to provide a seamless, all-hazards emergency telecommunications management capability. Subsequently, the OMNCS developed an organization and operations (O&O) plan and an implementation plan for unifying emergency telecommunications management functions under the NTMS. In April 1994, the NTMS Program Office was transitioned from the Office of Plans and Programs to the Office of Emergency Preparedness.

NTMS performed the following activities:

- Continued training of industry and Government emergency telecommunications managers, including the National Emergency Management Team (NEMT) Communications Functional Groups (CFG) and conducted regional Emergency Response Training Seminars nationwide
- Procured applications software/hardware for the development of a Telecommunications Emergency Management System (TEMS) prototype and testbed
- Activated eight additional NTMS OC's
- Published and distributed two editions of the *NTMS News*.

EXHIBIT 2-6

Current NTMS OC's



National Telecommunications Coordinating Network (NTCN)

The NTCN is the primary telecommunications capability supporting the operations and functions of the NTMS. The NTCN supports the NTMS by providing communications connectivity for the exchange of minimum essential telecommunications management information between NTMS elements.

The NTCN relies on existing multimedia telecommunications systems and capabilities that can be readily accessed to support the NTMS all-hazards mission. HF radios deployed by the NTMS Program Office can serve in a contingency as a means of communications if other systems or network segments are disrupted or inaccessible.

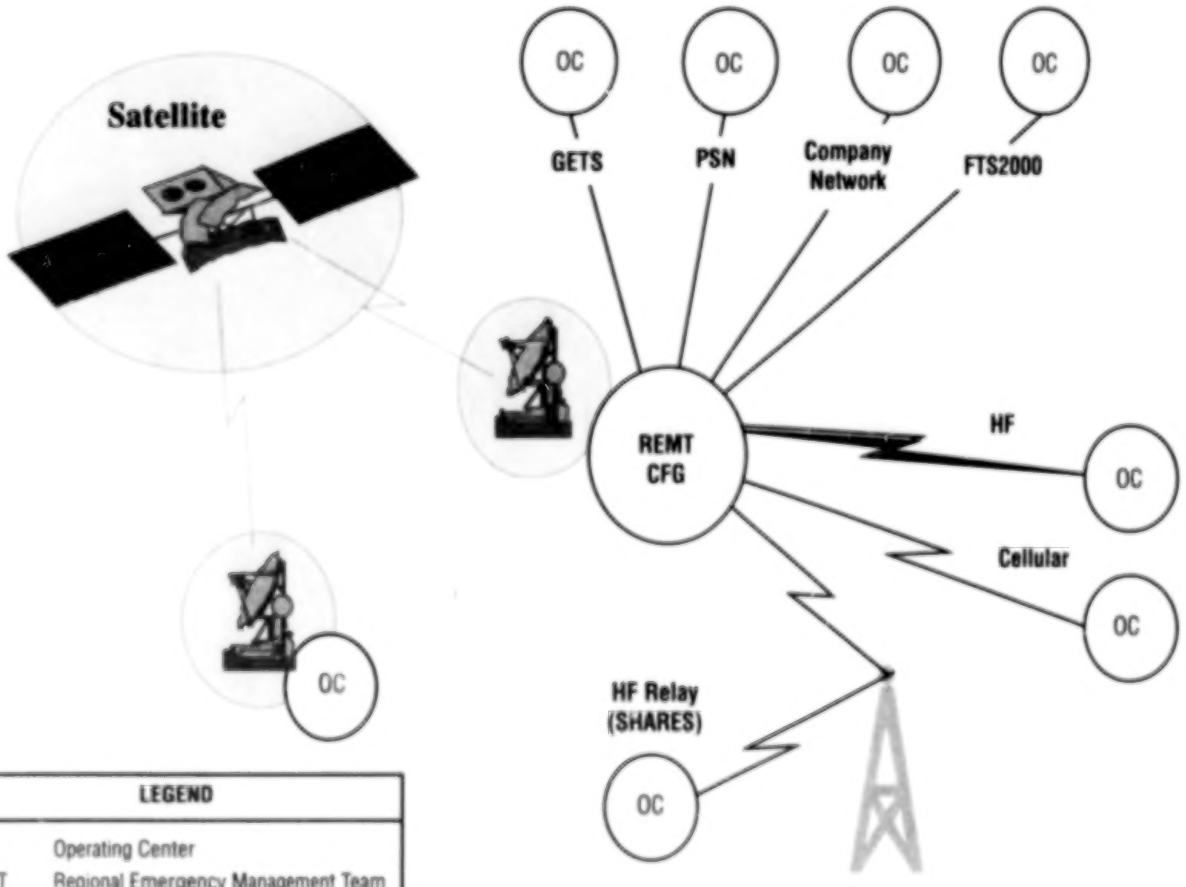
Efforts during the year focused on expanding the NTCN from a fixed, PSN, and HF-oriented system, to a flexible, seamless communications response capability. Under the NTMS "umbrella structure," the NTCN is moving to incorporate the Federal Telecommunications System 2000 (FTS2000), GETS, SHARES, satellite, cellular, wireless messaging, and an HF data capability as part of this integrated response capability. This concept is illustrated in Exhibit 2-7.

This year, the NTCN:

- Conducted four NTCN communications tests
- Revised the *NTMS OC Handbook* to include provisions for an all-hazards response capability
- Conducted ALE interoperability tests on the Harris RF-3200E radio system

EXHIBIT 2-7

NTCN Operational Concept



LEGEND	
OC	Operating Center
REMT	Regional Emergency Management Team
CFG	Communications Functional Group

- Trained OC personnel at eight sites
- Completed site surveys at nine NTMS OC's for the installation of HF radios and associated antennas
- Revised the NTMS OC training curriculum
- Installed HF radios at eight OC locations.

Telecommunications Emergency Management System (TEMS)

TEMS is being developed using a variety of commercial off-the-shelf (COTS) applications software. One such application is the Emergency Information System for Microsoft Windows (EIS/Win), which will provide NTMS telecommunications managers with relevant information, standardize the type of information collected in an emergency or disaster, and allow efficient exchange of information between decision makers. Additional software applications will be evaluated during the testbed phase to ensure TEMS provides the greatest degree of flexibility and functionality.

TEMS activities included:

- Conducting information management system requirements interviews with selected Regional Managers
- Developing Baseline Telecommunications Management Information requirements
- Developing a TEMS prototype and testbed
- Developing Emergency Team Information Base requirements.

National Disaster Medical System (NDMS)

The NDMS is a cooperative medical assistance effort of Department of Health and Human Services (HHS), DoD, VA, and FEMA. With HHS having the lead, day-to-day activities are centered at the Public Health Service (PHS) headquarters in Rockville, Maryland.

The NDMS has played major roles in many of the Nation's disaster response efforts and plays a significant role in the *Federal Response Plan.* Following the devastation caused by Hurricane Andrew, the OMNCS was formally asked by the HHS Director, Office of Emergency Preparedness/NDMS, to develop a telecommunications architecture to support the full range of NDMS mission tasks. The OMNCS agreed to develop a phased approach that would meet immediate needs as well as future comprehensive and complex NDMS telecommunications requirements. The approach demanded a thorough requirements analysis that culminated in an architecture report that satisfies all NDMS requirements and includes cost effectiveness, functionality, and interoperability.

NDMS activities included:

- Conducting an analysis of PHS disaster response elements to identify current communication assets available, and identifying functional and communication requirements
- Conducting a survey of COTS communications equipment to fulfill functional requirements
- Developing a communications architecture using COTS and equipment available through other Government organizations
- Providing a plan for procurement of communications equipment to support ESF 8 (Health and Medical Services) and PHS-deployed operations.

TELECOMMUNICATIONS SERVICE PRIORITY (TSP) SYSTEM

The TSP System continues to facilitate the priority provisioning and restoration of NS/EP telecommunications services. During the past year, the TSP System was a fundamental component of emergency response communications in the wake of disasters such as the Northridge earthquake. To ensure the TSP System remains an effective tool, the TSP Program Office continues to provide

training and education seminars about the TSP System and its role in emergency response.

TSP efforts focused on automation to improve its operational efficiency and provide a higher level of service to the TSP community. Several automated tools were developed to facilitate the electronic processing of TSP requests and other TSP information. Additionally, the TSP Program Office developed automated tools to facilitate communications between and among TSP System users, vendors, and the TSP Program Office.

The following points summarize TSP Program Office activity during the past year:

- The TSP System was an active component of the NCS ERT Seminars held this past year in Oakland, California; Denver, Colorado; and Philadelphia, Pennsylvania. These training seminars enhance the understanding of Federal- and State-level emergency response communications, and facilitate a higher level of coordination in response to disasters. Participants in the training seminars are educated about the TSP System and its role in emergency response communications.

- TSP educational briefings were provided to various organizations during the past year. The State of Florida 911 Coordinators' Conference was briefed on TSP and its relation to 911 systems. GTE was also provided a thorough overview of the TSP System and vendor responsibilities under the system. Additionally, the Red Cross was provided a briefing describing its applicability.

- Development of an automated tool for tracking TSP provisioning priorities was completed by the TSP Program Office. The TSP Provisioning Tracking System facilitates access to timely and accurate information about the status of TSP assignments during emergency response situations. This automated tool can be accessed by TSP System users and vendors to update TSP assignment status and information on-line.

- TSP System data reconciliation with both service users and service vendors was completed for the first time during the past year. TSP information from users, vendors, and the TSP Program Office was compared to ensure uniformity and to resolve discrepancies. The reconciliation process was installed as a part of the TSP System to ensure accurate and consistent records are maintained. As a part of the reconciliation process, TSP users were afforded the opportunity to revalidate services with the TSP Program Office.

- A document management system to facilitate the electronic processing of TSP information was developed by the TSP Program Office. This document management system allows TSP users to electronically complete a TSP request form for submission to the TSP Program Office. It also facilitates effective user management of TSP assignments. Additionally, the system facilitates the process of completing supporting TSP documentation that is required by the TSP System. The document management system ensures that TSP information is consistent between TSP users and the TSP Program Office, and facilitates electronic processing of TSP information directly from the user to the management information system (MIS).

- The TSP Program Office developed guides to aid TSP System users in obtaining TSP provisioning and restoration priorities. The *TSP Provisioning and Restoration* guides provide easy-to-follow directions for obtaining TSP assignments. These documents summarize information contained in NCSM 3-1-1, focusing only on the specific information needed to guide a user through the process of obtaining an assignment. This manual will aid users during emergency situations, when TSP assignments are very time sensitive.

- Procedures for electronically processing DoD Telecommunications Service Requests (TSR) were developed by the TSP Program Office.

TSR's are electronically downloaded directly from the Worldwide Online System (WWOLS), and uploaded to the TSP MIS. This process quickens the processing of DoD TSP requests, and significantly increases the efficiency of the TSP Program Office. Additionally, procedures for electronically processing Federal Aviation Administration (FAA) and Federal Reserve Board (FRB) TSP information were implemented.

- The TSP Program Office developed and implemented a BBS to facilitate communications among individuals and organizations involved with the TSP System. The BBS was utilized to post TSP System information pertinent to TSP System users and vendors. Through the BBS, users can send information to the TSP Program Office, including uploading TSP requests. Users may also communicate with other BBS users.

NS/EP TELECOMMUNICATIONS PROGRAM ACTIVITIES

The OMNCS, in consultation with NCS member organizations, and with approval and guidance from the Executive Agent, NCS, implements, administers, and maintains NS/EP telecommunications programs. These programs support the NS/EP requirements of the Federal Government by providing enhanced features and services to NS/EP users to ensure survivable and robust emergency communication capabilities. These capabilities are designed to be available under an all-hazards environment.

NATIONAL LEVEL NS/EP TELECOMMUNICATIONS PROGRAM (NLP)

Each year, as part of the *NS/EP Telecommunications Planning Process,* the NLP and its associated programs are coordinated with NCS member organizations. The revised *Proposed Fiscal Year 1996 National Level National Security and Emergency Preparedness Telecommunications Program,* dated September 23, 1994, presents the coordinated telecommunications programs for review by the COP and the Executive Agent, NCS. NS/EP telecommunications programs of the NLP reflect the policy objectives outlined in E.O. 12472 and ensure the provision of NS/EP telecommunications functional requirements of the Federal Government during all-hazards situations.

The FY94 NLP consisted of GETS, the Commercial SATCOM Interconnectivity (CSI), and the Commercial Network Survivability (CNS) programs. GETS is a PSN-based service that is being developed and implemented to evolve with the PSN, thereby taking advantage of and encompassing emerging technologies. CSI uses commercial satellite assets and transportable earth terminals to enhance NS/EP telecommunications capabilities during all stress levels. CNS develops enhancements to improve the diversity of NS/EP access and egress connectivity through the integration of emerging technologies.

NLP Funding Support

DoD funds all preimplementation, implementation, and recurring costs associated with the NLP in accordance with guidance received from the Executive Agent, NCS.

FY94 NLP funding was used to support the activities of the GETS, CSI, and CNS programs. A portion of funding support for the CNS program was used for initial development of the newly established Cellular Priority Service (CPS) program.

In September 1994, the CSI and CNS programs were terminated. The termination of these programs was based on a reassessment of the threat to the telecommunications infrastructure. Approved FY95 NLP funding for these programs will be used to pay for further GETS implementation and to support the development activities of CPS.

On September 26, 1994, the *Revised Proposed Fiscal Year 1996 National Level National Security and Emergency Preparedness Telecommunications Program Funding* document was forwarded to the Executive Agent, NCS, for

guidance and approval. The revised proposal includes provisions for further funding of the GETS program and the CPS program.

Government Emergency Telecommunications Service (GETS)

GETS provides NS/EP users with a dependable, cost-effective, and flexible switched voice and voiceband data communication service that will be available under a broad range of circumstances including natural or human-made disasters. GETS is designed to take advantage of new and emerging technologies available within the PSN, such as enhanced call completion (ECC) features and services, Advanced Intelligent Network (AIN) capabilities, Integrated Services Digital Network (ISDN) enhancements, and CPS access/egress options. This benefit allows broad opportunities and great flexibility for the introduction of additional emerging enhancements and augmentations, and enables GETS to be more responsive to the changing NS/EP environment.

The GETS approach provides for a phased implementation allowing for an early, limited activation of GETS services with additional capabilities to be activated over time as budgets permit. Exhibit 2-8 depicts GETS when full operational capability (FOC) is attained.

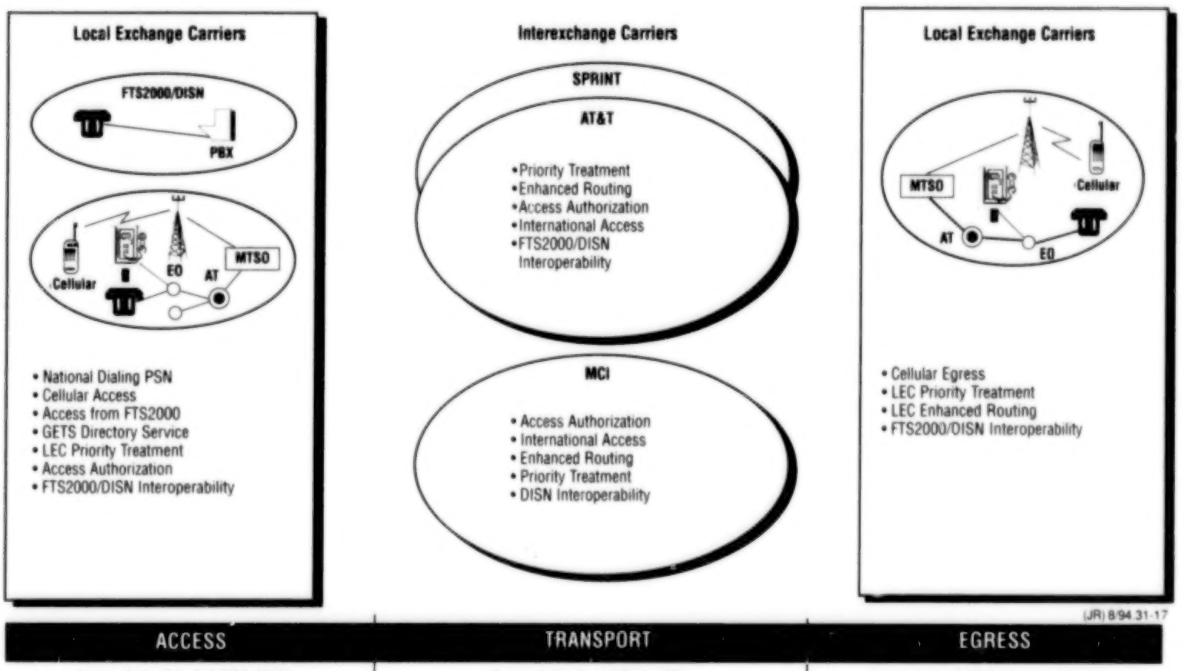
The GETS program encompasses the following:

- GETS will use existing PSN features and services to provide a nationwide capability for switched clear voice, encrypted secure voice, facsimile, and voiceband data communications.

- GETS calls will be afforded priority treatment and enhanced routing in the PSN. The GETS program will utilize Enhanced-Real Time Network Routing (E-RTNR), which will have a more flexible call routing capability that

EXHIBIT 2-8

GETS Capabilities



provides real-time routing, as well as the highest priority to NS/EP traffic within the AT&T network.

- GETS will be available nationwide, and will also provide international access and egress through a special GETS access number. User authentication will be provided using a personal identification number (PIN).

During the past year, the attainment of enhanced services for NS/EP users was advanced through the auspices of the GETS program. The following milestones were reached:

- The *GETS Planning Guide,* which is designed to provide the NCS member organizations with the necessary information to prepare for the use of the service, was coordinated and issued February 18, 1994.

- The Government released a request for proposal (RFP) in November 1993 for the competitive placement of a GETS System Engineering and Technical Assistance (SETA) contractor. The Government awarded the GETS SETA contract in May 1994 to Science Applications International Corporation, and its team composed of Booz•Allen & Hamilton and three small disadvantaged business subcontractors. The SETA contractor will provide support for a variety of activities within the GETS Program Management Office, such as its acquisition and contract management functions, as well as its engineering and analysis requirements.

- The methodology for generating PIN's was developed. The PIN card was designed and produced in Spring 1994. An initial database of PIN's and GETS users was created. Distribution of the PIN list to the IEC's and distribution of PIN cards, along with GETS user guides, to the initial set of GETS users were made in September 1994.

- The OMNCS coordinated with the North American Numbering Plan Administrator, Bellcore, the Cellular Telecommunications Industry Association (CTIA), the U.S. Telephone Association, and the individual carriers for opening the GETS 710 numbering plan area (NPA) code nationwide. Many of the carriers had complied with the opening of 710 NPA by September 30, 1994, the limited capability (LC) commencement target date. Most carriers are expected to complete opening 710 NPA by December 1994.

- The three IEC's (AT&T, MCI, and Sprint) continued to support the Government by providing data about networks, recommending technical approaches for processing NS/EP traffic, and implementing GETS services within their respective networks. LC acceptance testing was completed by AT&T, MCI, and Sprint. All three carriers activated LC service on schedule, September 30, 1994. In addition, E-RTNR capability was activated by AT&T on September 10, 1994.

- GETS testing by the IEC's, the integration contractor (IC), and the Government will continue throughout LC in order to validate the service and to prepare for initial operational capability, which is scheduled for October 1, 1995. A major GETS demonstration (DEMO 94) will be conducted in late October 1994 to display GETS capabilities and the NS/EP benefits achievable by its use.

- Procedures for the OMNCS administration of GETS during LC were developed in concert with the IEC's, the IC, and the NCS member organizations. They are reflected in the *Interim GETS Administration Handbook* published in September 1994. The procedures included the general agreement on billing and funding of GETS usage reached with the COP/COR in July 1994. An NCS issuance on billing will be published in early FY95. Individual memoranda of agreement (MOA) will be negotiated with the

NCS member organizations shortly thereafter.

Commercial SATCOM Interconnectivity (CSI)

The CSI program was designed to provide communications via commercial satellite connectivity between isolated enclaves of the PSN during times of crisis. With the changing environment, the CSI program adjusted assets to emphasize natural disasters and contingencies in the all-hazards environment. At the beginning of FY94, the CSI program consisted of 12 earth stations, 11 of which were accepted with 1 under construction, and an interoperable, telemetry, tracking, and control (ITT&C) facility to recover the three-axis-stabilized family of satellites.

During FY94, successful acceptance testing of the site under construction, NCS Transportable System (NTS), was performed. The NTS is a transportable C-band earth station and private branch exchange (PBX) that provides survivable emergency communications via commercial satellites to isolated or disconnected NS/EP PSN users during all-hazards situations.

The NTS is composed of C-band electronics and a PBX that are mounted in transit cases and racked into a truck. The PBX has the capacity to simultaneously support 48 telephone units (provided with the truck), a T1 satellite link, and a terrestrial T1 link to a surviving local switch. A 4.5-meter antenna and a 13-kilowatt generator are mounted on a trailer that is towed behind the truck. Both the trailer and the truck can be transported as a unit on C-130 aircraft.

Due to FY94 budget reductions that were made in January 1994 and a reassessment of the NS/EP telecommunications environment, the CSI program terminated eight earth stations, reducing the program to four earth stations, and the ITT&C. The four remaining sites were chosen to remain in operation based on cost and the ability to be responsive to natural disasters. These remaining sites provided two transportable earth stations, as well as an East- and West-coast CONUS gateway to allow for connectivity into the PSN for maximum coverage of CONUS and outside CONUS (OCONUS) areas.

Commercial Network Survivability (CNS)

The CNS program enhances the short-haul connectivity of commercial and Government telecommunications networks in support of NS/EP telecommunications needs. CNS enhancements improve the diversity of NS/EP access and egress connectivity through the integration of emerging communication technologies. Network enhancements developed under the CNS program will be integrated with GETS as it is implemented.

Before the program was reassessed and terminated, the following major CNS activities were conducted:

- Continued to perform a cost/benefit analyses on all carrier interconnects. This analysis used the zonal threat model to analyze local access and transport area (LATA) connectivity based on varying degrees of PSN damage. Based on this analysis, the remaining interconnects were terminated.

- Initiated a task to design a new network enhancement that would be interoperable with GETS and provide diverse access and egress to NS/EP users. The purpose of this task was to ensure that all CNS services were interoperable with GETS.

The Mobile/Transportable Telecommunications (MTT) component of the CNS program seeks to restore and extend PSN links for NS/EP telecommunications using military/tactical communication resources, primarily AN/TRC-170 tactical radio equipment. Access and egress connectivity is also enhanced through the use of tactical Mobile Subscriber Equipment (MSE). Extensive coordination and planning with National Guard units in conjunction with the preparation for DEMO 94 was completed. Although the CNS program was terminated in September 1994, planned MTT demonstrations for DEMO 94 will be

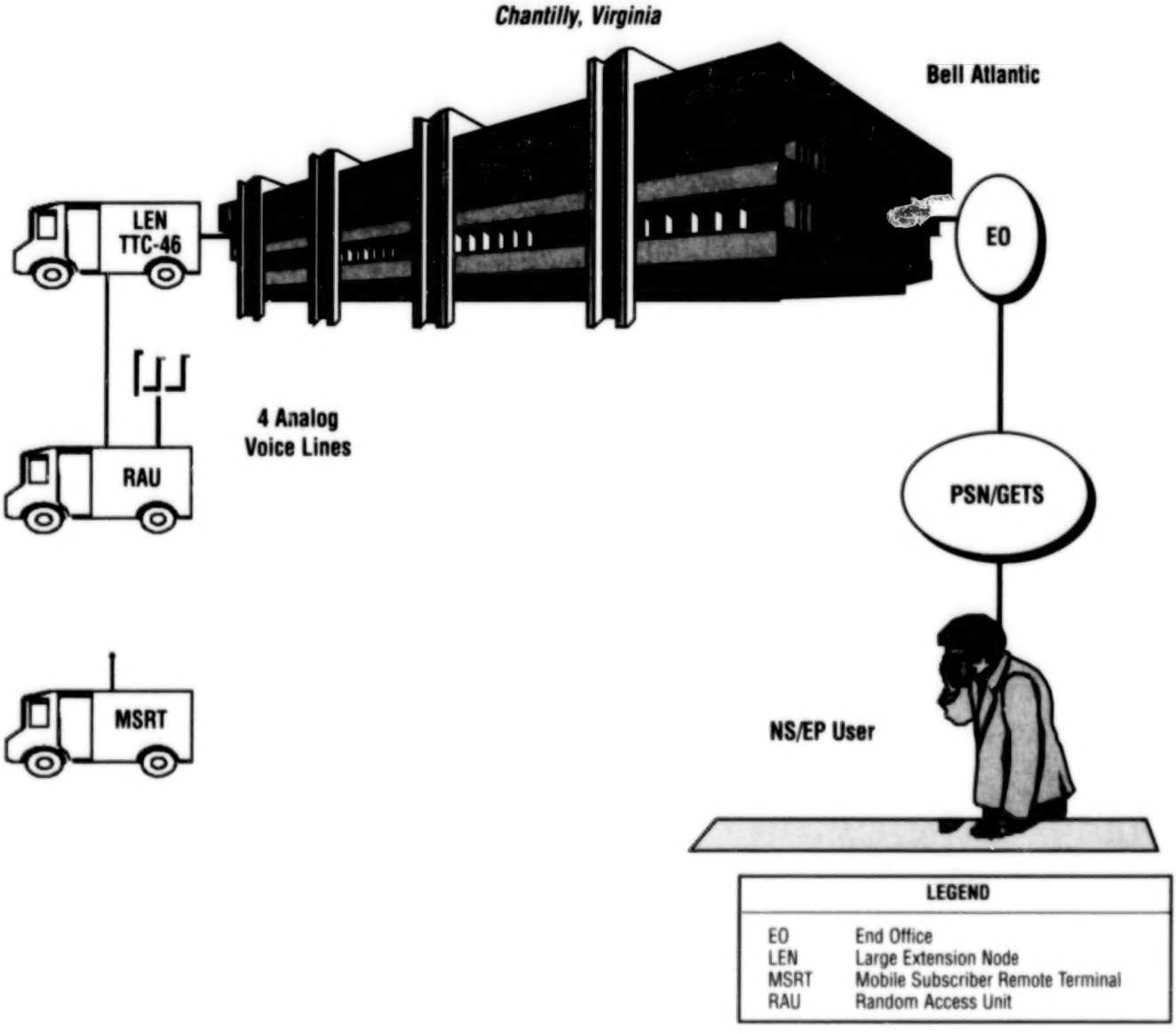
accomplished.

The major activities involving MTT were:

- Planned for DEMO 94 to include the Maryland National Guard's MSE. Exhibit 2-9 shows the MTT configuration that was tested.
- Planned for DEMO 94 to include the integration of the Missouri National Guard's MSE, TRC-170's, and a tactical AN/TTC-39 voice switch. Exhibit 2-10 provides more detail on the test configuration.

EXHIBIT 2-9

Demo 94 Maryland National Guard Test Configuration



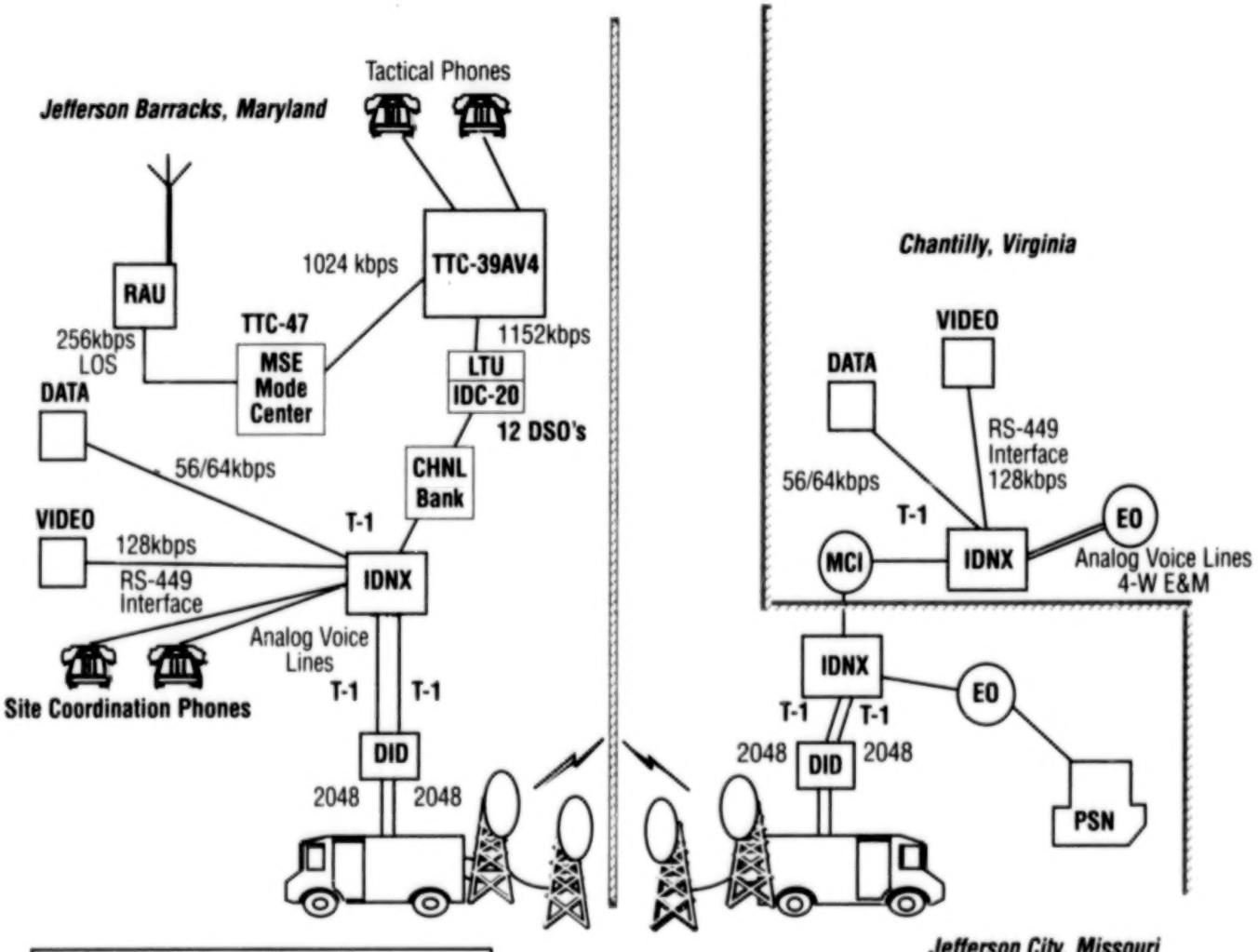
The network enhancements developed under this program were passed to the GETS Program Office for inclusion in the implementation of GETS. Development of critical cellular access objectives will be continued under the CPS program.

Cellular Priority Service (CPS)

The objective of CPS is to facilitate and coordinate the development and implementation of cost-effective, timely, and universal cellular access and egress for NS/EP users. To accomplish this objective, the program will identify NCS member organization and NS/EP user cellular requirements,

EXHIBIT 2-10

DEMO 94 Missouri National Guard Site



LEGEND	
DID	Digital Interface Device
LTU	Line Termination Unit
EO	End Office
IDNX	Integrated Digital Network Exchange
MSE	Mobile Subscriber Equipment

define cellular priority access and egress service descriptions, develop a priority assignment and management system, make contributions to organizations developing cellular standards, and stimulate competitive interest in providing cellular priority service among cellular priority providers and equipment manufacturers.

Work on cellular priority service was started in FY93 and continued in FY94 under the auspices of the CNS program. Exhibit 2-11 reflects the proposed major program milestones and planned dates for accomplishment of the milestones.

During FY94, under the CNS program, CPS development activities included:

- Establishing a program office to act as the focal point for the OMNCS cellular priority access and egress activities, such as coordinating with the user community to obtain user perspectives and requirements, implementing changes to the TSP System, and stimulating competitive interest among carriers and vendors.

- Completing an *OMNCS Cellular Priority Access Implementation Plan* that discusses the OMNCS strategy and approaches to ensure a cost-effective, timely, and universal cellular priority access capability for NS/EP users.

- Investigating various technical approaches to provide cellular priority access through demonstrations. A channel reservation scheme was tested and evaluated with McCaw Cellular at its laboratory in Kirkland, Washington, on August 15, 1994. This scheme reserves a fixed number of radio channels. Priority users complete priority calls through the reserved channels, while general public callers complete calls only on the remaining unreserved channels.

EXHIBIT 2-11

CPS Milestones

Major Program Milestones	Planned Dates						
	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Consult with FCC	▲ 4						
Draft Implementation Plan	▲ 4	▲ 4					
Charter Program Office		▲ 4					
Channel Reservation Demonstration		▲ 2 ▲ 4					
NSTAC Service Description		▲ 3	△ 2				
Implementation Plan Review			△ 2 △ 4				
Standards Modifications			△ 2	△ 2			
Initial Commercial Offerings	▲ 1			△ 2			
Uniform Service Implementation				△ 3		△ 4	
Priority Assignments				△ 2			
Exercises				△ 3	△ 1 △ 3	△ 1 △ 3	△ 1 △ 3
Emerging Wireless Technology Priority Access Scheme Evaluation				△ 2			

Note: numbers denote Fiscal Year Quarters

NS/EP TELECOMMUNICATIONS CONTINGENCY PROGRAMS

Contingency programs provide immediate response capabilities and reliable backup capabilities when other systems fail. Contingency programs are described below.

SHARED RESOURCES (SHARES) HIGH FREQUENCY (HF) RADIO PROGRAM

The NCS SHARES HF Radio Program is an NCS initiative designed to establish and maintain a single, interagency emergency message handling capability by bringing together the HF radio resources of Federal and federally affiliated organizations to support NS/EP requirements. One thousand forty-three HF stations, representing 46 organizations, currently participate in SHARES program activities.

Affiliate participation include the Military Affiliate Radio System (MARS), the Civil Air Patrol (CAP), the State Emergency Operations Centers, the American Red Cross, and industry, either through individual company affiliation with the NCC or as part of the NTCN.

SHARES continued to expand during FY94 with the addition of seven new organizations contributing HF resources for use in the SHARES network. Coverage of the current SHARES HF Radio Program is shown in Exhibit 2-12.

The SHARES HF Interoperability Working Group continues its task of maintaining the SHARES HF Radio Program, and fostering HF radio interoperability through examination of regulatory, procedural, and technical issues.

The working group expanded awareness of SHARES and its capabilities throughout the Federal community. Increased participation by emergency response personnel in SHARES exercises provided training in the preparation and processing of SHARES message traffic. The SHARES briefing was also presented by working group members at Federal emergency preparedness conferences, seminars, and training sessions conducted by the NCS member organizations.

SHARES operational support was provided during the Northridge earthquake. Sixty-six SHARES stations, seven within the immediate disaster area, were on-the-air and available to support emergency message traffic immediately following the Northridge earthquake. Although normal communications were not severely impacted, status reports from the Northridge disaster area were processed via SHARES in the hours immediately following the earthquake. *SHARES Advisory Notices* 94-1, 94-2, and 94-3 were issued, and the SHARES Emergency Coordination Team (SECT), and SHARES Emergency Management System (SEMS) were activated.

NATIONAL TRANSPORTABLE TELECOMMUNICATIONS CAPABILITY (NTTC)

NTTC is a rapidly deployable, integrated satellite and cellular telecommunications system. It was maintained in a stand-by mode during FY94. The NTTC contract expired on September 28, 1994. The OMNCS is investigating modern technologies to provide improved and cost-effective transportable capabilities to NS/EP users during disasters and emergencies.

EMERGING NS/EP TELECOMMUNICATIONS PROGRAMS

Emerging technologies, services, and features are investigated, experimented with, and developed to take advantage of additional enhancements that provide NS/EP users improved reliability and ensure uninterrupted performance of essential emergency functions. The programs that the NCS is using to develop emerging services and features are described below.

ADVANCED INTELLIGENT NETWORK (AIN)

AIN is an emerging telecommunications technology that has been identified by the President's NSTAC and OMNCS as having the potential capability to meet the NS/EP telecommunications needs of NCS member organizations.

EXHIBIT 2-12

SHARES HF Radio Stations

AIN technology is defined as a telecommunications architecture that consists of signaling systems, switches, computer processors, databases, and transmission media that provide customized network services that can be flexibly, rapidly, and cost-effectively configured to meet changing customer needs. Among the capabilities of AIN is the ability to provide priority treatment, user authentication, enhanced routing, intelligent network management alternatives, and other robust communications features that support NS/EP telecommunications improvements.

The AIN program of the OMNCS is responsible for the development of AIN-based technology for NS/EP capabilities. The OMNCS AIN program has the following goals:

- Monitor evolving AIN architecture developments
- Ensure that NS/EP telecommunications needs influence the evolving AIN technology
- Define, develop, and demonstrate AIN capabilities for NS/EP telecommunications
- Promote NS/EP applications
- Facilitate integration (e.g., Defense Information System Network [DISN]/FTS2000)

The AIN program approach currently being followed to meet these goals includes the following areas: information gathering on the collection of data on AIN industry deployments and NS/EP user needs, monitoring the development of AIN architectures, conducting analysis including the assessment of NS/EP requirements and AIN capabilities, and demonstrating proof-of-concepts involving the design and implementation of AIN capabilities supporting NS/EP requirements.

The AIN Program Office coordinated with industry and NCS member organizations to identify existing AIN capabilities and new capabilities that will meet NS/EP telecommunications functional requirements for NS/EP users. It also identified a preliminary set of services, which, upon successful proof-of-concept demonstrations, can be introduced into NS/EP initiatives such as GETS.

The AIN architectures required to support these services are being evaluated in terms of reliability and survivability, as well as security vulnerabilities, which include physical security and security from software penetration and manipulation. Also being investigated is the feasibility of interconnection of LEC and IEC signaling networks as required for implementation of AIN capabilities.

To influence the evolving AIN technology and to ensure that NS/EP telecommunications needs are appropriately considered by AIN service developers and providers, the AIN Program Office is actively monitoring and participating in all Open Network Architecture rule-making procedures of the FCC that are relevant to AIN. Most recently, comments have been filed by the AIN Program Office concerning the FCC's *Notice of Proposed Rule-Making for Third Party Access* in regard to a carrier's ability to ensure network integrity and reliability in such an environment.

Ongoing activities in the OMNCS AIN program include coordination of AIN-related activities with other Government initiatives to identify program interrelationships and increase synergy between activities. The AIN Program Office continues to identify new opportunities and determine the strategic direction (e.g., NSTAC, NII/Defense Information Infrastructure [DII] vision, NRC). Upcoming activities include a planned demonstration of AIN voiceband and AIN ISDN capabilities for GETS applications.

ENHANCED SATELLITE CAPABILITY (ESC)

Through the ESC program, the OMNCS participates with industry and Government in assessing and documenting new and experimental communications satellite capabilities and evaluates the applicability of new technologies to existing and future NS/EP requirements. The project will foster development of new technologies and initiatives as

well as propose architectures that use new capabilities to support NS/EP requirements. All ESC activities support NSDD-97 and E.O. 12472, which reference using satellite systems to support NS/EP requirements. Exhibit 2-13 shows the array of satellite systems being investigated through the ESC program. These systems, as well as other developing satellite technologies, are investigated under three specific subtasks:

- Advanced Communications Technology Satellite (ACTS)
- American Mobile Satellite Corporation (AMSC)
- Enhanced Satellite Studies (ESS).

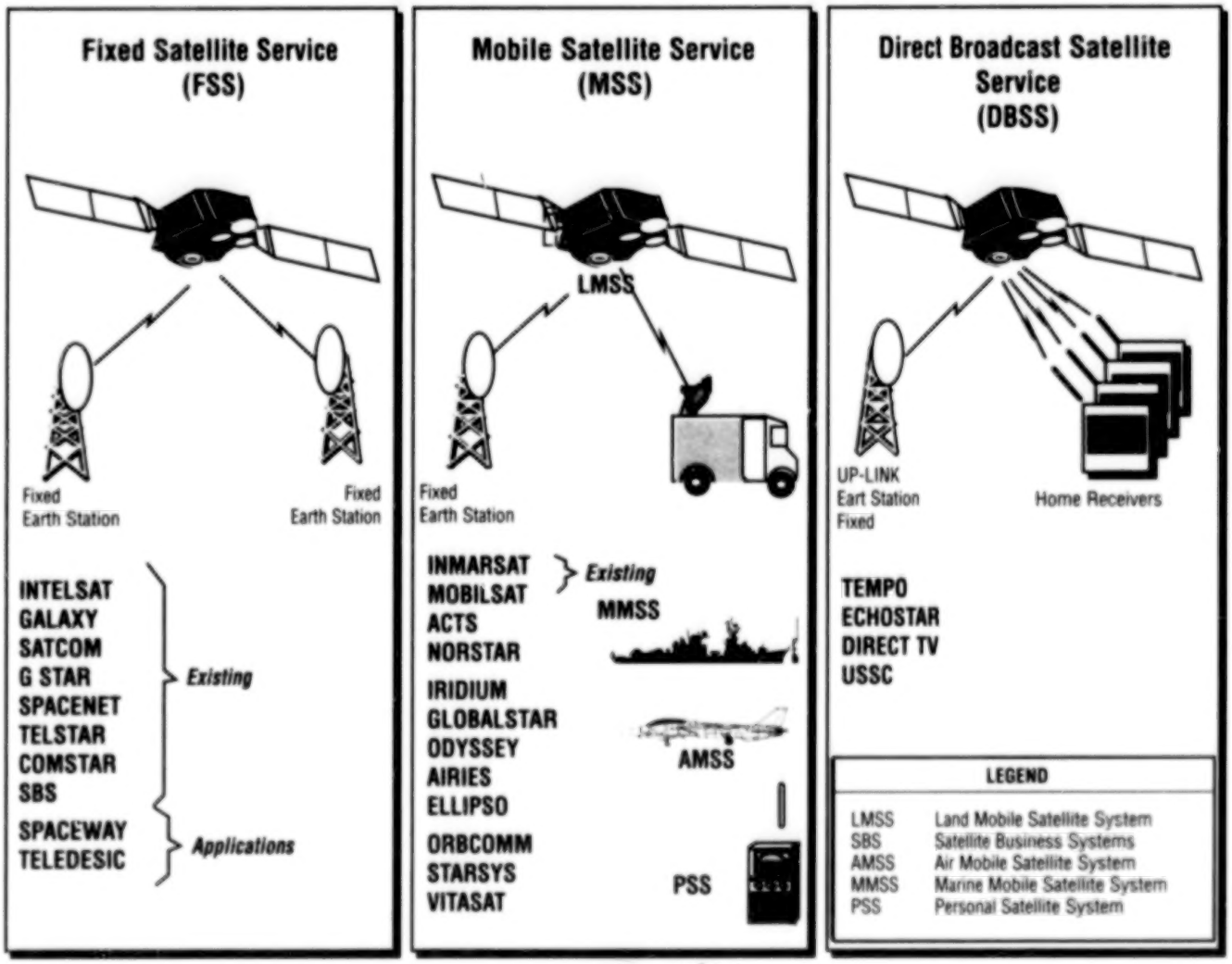
Advanced Communications Technology Satellite (ACTS)

The OMNCS has a memorandum of understanding (MOU) with the National Aeronautics and Space Administration (NASA) to participate in the ACTS program. ACTS is a NASA-funded experimental satellite program designed to keep the United States at the forefront of telecommunications technology. The ACTS program provides industry and the U.S. Government with an opportunity to experiment with many new technologies such as:

- Communications in a higher frequency band (Ka-band)
- Rain fade compensation
- On-board processing and switching
- Hopping spot beams.

EXHIBIT 2-13

Current Developing Satellite Systems



Since 1985, the OMNCS has been a key participant in the ACTS program. The OMNCS has undertaken the following initiatives:

- Funding two Ka-band T1 very small aperture (VSAT) earth stations
- Developing NS/EP features (e.g., security, priority, precedence, and retry)
- Demonstrating secure communications using the Jet Propulsion Laboratory (JPL) ACTS Mobile Terminal (AMT)
- Incorporating a transportable capability in the ACTS T1 VSAT's
- Experimenting with ACTS high data rate capabilities.

Since the successful launch of ACTS on September 12, 1993, experimentation has proceeded on schedule. The OMNCS has employed experimentation to show the benefits and value of an ACTS-type system to support NS/EP user telecommunications needs. Initial experimentation has been successfully completed and shows the potential of advanced satellites in higher frequency bands to support NS/EP needs. Exhibits 2-14 and 2-15 depict general test configurations with the OMNCS ACTS T1 VSAT's and the AMT, respectively.

American Mobile Satellite Corporation (AMSC)

The OMNCS is participating with JPL and the AMSC to demonstrate secure mobile communications over the AMSC satellite system. The AMSC is a commercial satellite system designed

EXHIBIT 2-14

OMNCS ACTS T1 VSAT Experimentation

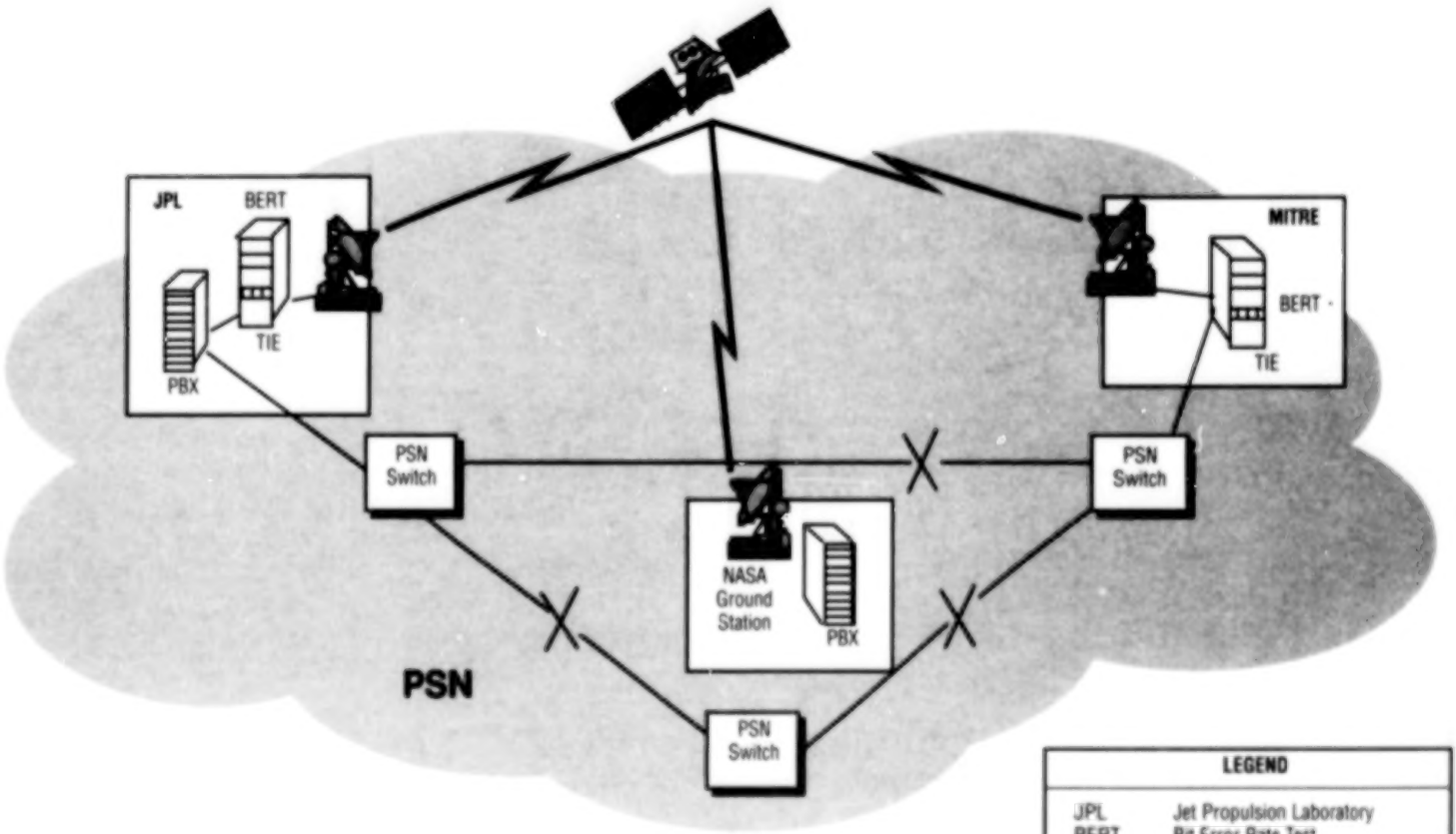
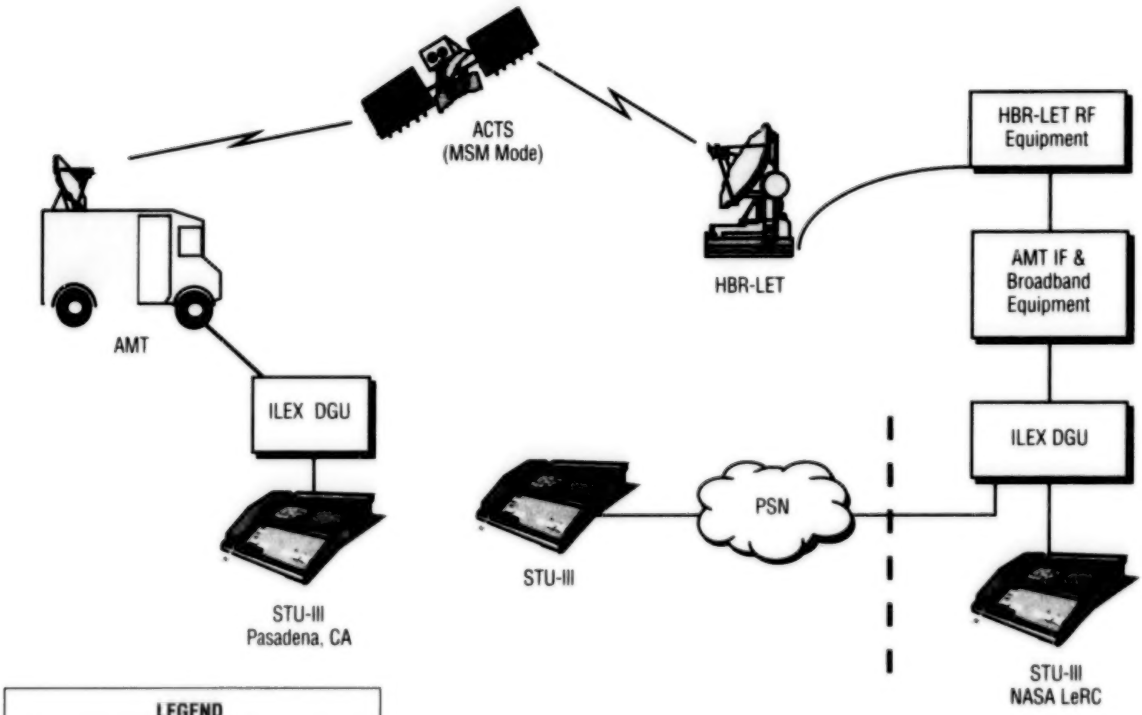


EXHIBIT 2-15

OMNCS AMT Experimentation



LEGEND	
AMT	ACTS Mobile Terminal
DGE	Digital Gateway Unit
IF	Intermediate Frequency
HBR	High Burst Rate
LET	Link Evaluation Terminal
MSM	Microwave Switch Matrix
RF	Radio Frequency

to provide mobile communications throughout North America using three geostationary satellites (the first will be launched in early 1995). The AMSC is currently the only company with an FCC license to provide an operational mobile satellite system (MSS) in the L-band frequency range capable of operating anywhere within the United States. This system will use digital channels to more effectively and efficiently process communications. The OMNCS AMSC effort includes the following:

- Investigating the capability of the AMSC architecture to fulfill NS/EP requirements
- Developing secure mobile satellite communication capabilities
- Experimenting with and analyzing the potential use of the MSS for NS/EP communications.

The OMNCS tasked and provided funding for JPL to develop a link simulator of the AMSC service. The simulator has allowed preliminary experimentation and analysis of anticipated parameters including traffic, weather, and shading conditions.

Enhanced Satellite Studies (ESS)

The recent emergence of many potential low earth orbit (LEO) satellite systems (e.g., Iridium, Ellipso, ORBCOMM) has created another potential source of NS/EP telecommunications. To stay abreast of these and other new and developing satellite technologies and to influence industry to incorporate NS/EP requirements in these systems, the OMNCS initiated ESS. The goal of these studies is to analyze, assess, and influence the capabilities of emerging technologies to provide telecommunications services to NS/EP users. Although the major focus of these studies is on the large array of MSS, ESS will also investigate high data rate satellite communications, ISDN, and asynchronous transfer mode (ATM) switching over satellite. Recent activities include:

- Collection of MSS FCC license filings
- Analysis of proposed mobile systems for applicability to NS/EP users
- Interface meetings with industry to incorporate NS/EP requirements into developing LEO satellite systems
- Development of experiments with ISDN and ATM over satellites operating at T1 rates (1.544 Mbps) and expanding up to OC-12 (622 Mbps)
- Planning for experimentation with and use of developing MSS's.

The OMNCS is always investigating potential sources that may provide quality, reliable communications to NS/EP users. The ESC program provides an opportunity to study and experiment with new technologies in the rapidly changing world of telecommunications.

ENHANCED CALL COMPLETION (ECC)

The report for NSTAC XIV included the results of an ECC Task Force, which identified 23 PSN services or features that could enhance the completion of NS/EP calls. Several of these features (exemption from network management controls, trunk queuing, and enhanced routing alternatives) are being implemented with the GETS program. Other features (priority dial tone, dual homing/hosting, and LEC bypass) can be implemented locally at NS/EP user facilities. The *NCS Member Agency Telecommunications Enhancement Handbook*, dated August 26, 1993, was developed to assist member organizations with the implementation of services and capabilities in the "local loop" to ensure that connectivity and reliability are maintained to the end user.

As plans for the NII unfold, it is essential that ECC services or features are also developed and demonstrated to support NS/EP applications. The evolution of ECC capabilities in the NII is derived from the Administration's *The National Information Infrastructure: An Agenda for Action*, dated September 15, 1993, and from a White House memorandum dated April 14, 1993, which directs the OMNCS "to provide the means for improving call completion rates for NS/EP users during times requiring actions, when the telecommunications networks are stressed and congested."

An *NII Capabilities Survey* was prepared in response to NCS Vision 21 MFA VI (NII) to provide NCS member organizations with a unique opportunity to influence the development of the NII and to help identify the applications, features, and services that can be implemented to enhance the conduct of NS/EP activities by Federal, State, and local governments as well as other supporting NS/EP organizations.

Essential functions and critical Government services related to emergency planning, disaster recovery, and national security will achieve new efficiencies and effectiveness through the use of video conferencing, interactive databases, full-motion video, and other unique priority treatment features tailored for NS/EP missions.

The ECC effort will continue to investigate and assess the evolutionary development of ECC capabilities in the NII and applications to NCS member organization NS/EP requirements. These

capabilities will be included in proof-of-concept demonstrations and appropriately considered during implementation planning.

TECHNOLOGY AND STANDARDS

The OMNCS performs technical studies, analyses, and technology demonstrations. Research and development programs are used to determine potential effects of technology on NS/EP telecommunications. The OMNCS also develops plans, procedures, and standards to improve the interoperability, reliability, security, and network management of commercially provided and Government owned telecommunications and information systems.

In concert with technology activities, the OMNCS manages the Federal Telecommunication Standards Program (FTSP), which promotes Government telecommunications interoperability, reliability, and security. This program ensures, wherever feasible, that existing or evolving voluntary industry, national, and international standards are used as the basis of Federal telecommunications standards. Consequently, the FTSP facilitates Government competitive acquisitions of relatively lower cost telecommunications products, services, and systems.

The following paragraphs highlight OMNCS technology and standards activities. In addition, Appendix B, Technology and Standards, contains reference information on standards organizations, Federal telecommunications standards, participation in committees, Technical Information Bulletins, Technical Notes, and letter ballots.

TECHNOLOGY

Participation in technology activities continued under the auspices of E.O. 12472. These activities seek to identify new technologies that enhance NS/EP telecommunications and facilitate the fulfillment of NS/EP objectives within NCS organizations.

Wireless Communications

Wireless communication systems range from PBX/local area network (LAN) access systems to nationwide cellular telephone/LEO satellite systems. Recognizing the enormous communication potential and evolving capabilities of wireless communications that could enhance Government and NS/EP telecommunications applications, DOC and OMNCS jointly established the FWPC. On October 14, 1993, Assistant Secretary of Commerce for Communications and Information, Mr. Larry Irving, announced the creation of the FWPC.

The committee's charter calls for the development of a Federal Government wireless communications policy. This charter is fulfilled by allocating policy development activities to subcommittees and by committee members coordinating activities within the Federal Government. Mr. Irving chairs the FWPC and the Assistant Manager, NCS Office of Technology and Standards, is the vice chair. OMNCS staff serve as committee secretariat.

Federal Wireless Users' Forum (FWUF)

The NCS and NIST sponsored the third and fourth FWUF in January and June 1994, respectively. These forums provided the opportunity for potential and current Government wireless users to obtain information on evolving wireless technology, define Government wireless requirements, and interface with industry wireless representatives. Approximately 200 industry and Government representatives participated in each forum.

Technical topics covered in the forums encompassed digital Land Mobile Radio (LMR), Code Division Multiple Access (CDMA), Broadband CDMA, and satellite/terrestrial interoperability. Application topics encompassed medical, mobile office, soldiers' radio, and transportation management. The industry and Government representatives reached consensus on several wireless issues. Highlights of this consensus include:

- Potential exists for implementing digital, ubiquitous, interoperable, transparent, and secure wireless networks, but not in the immediate future.

- Recognizing the varied operations of the Federal Government within a global economy, Federal wireless requirements should be identified.

- Many Federal wireless requirements coincide with commercial marketplace requirements; however, the Federal Government should clearly and completely define unique requirements, such as priority access.

- Wireless communications represent an important component to the emerging NII.

Plans call for future forums to emphasize application profiles and define Government wireless requirements more clearly.

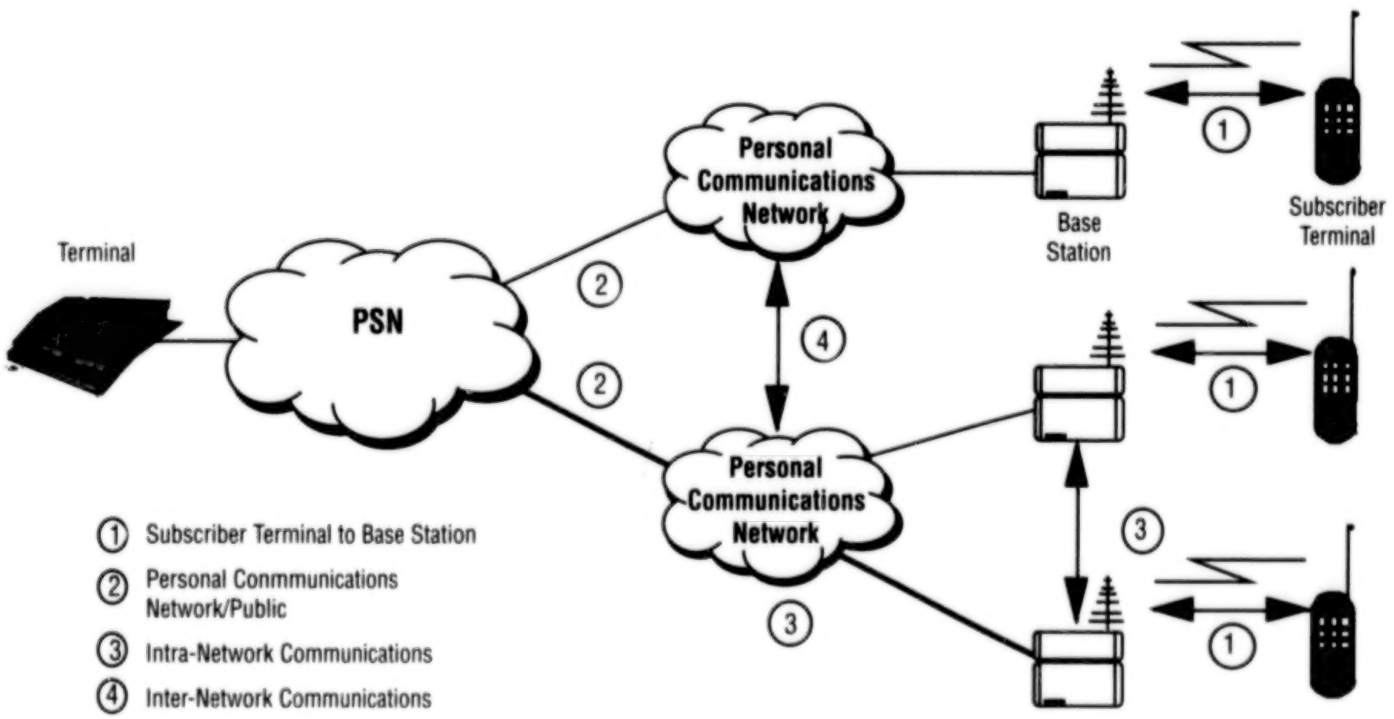
Personal Communication Service (PCS)

An analysis was performed on potential priority treatment services for NS/EP telecommunications in a PCS environment. The analysis identified four potential NS/EP priority treatment areas during conditions of network damage or congestion. These areas are listed below and depicted in Exhibit 2-16.

- Subscriber terminal to base station link
- Personal communications network to PSN link
- Intranetwork communications
- Internetwork communications.

EXHIBIT 2-16

Four Potential NS/EP Priority Treatment Service Areas



Telecommunications Industry Dependence on Foreign Sources

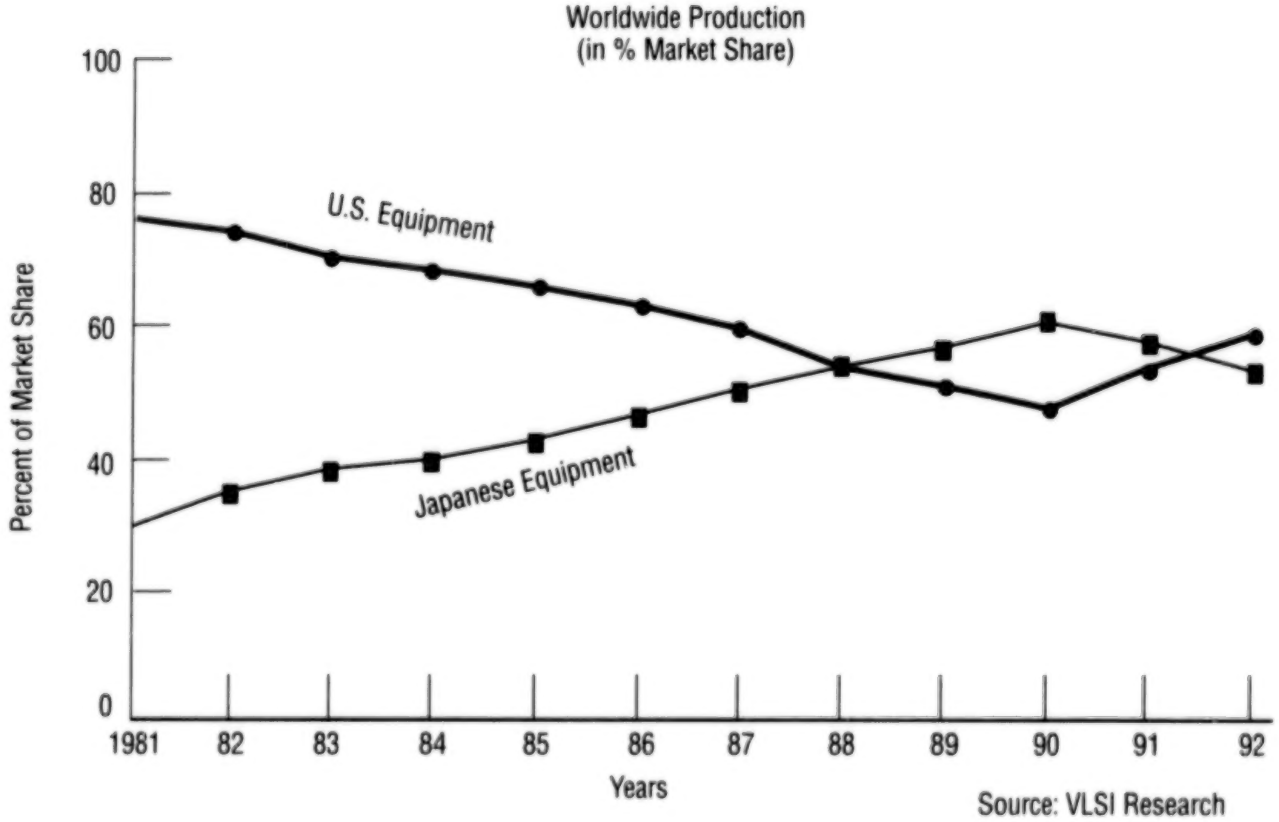
An analysis of U.S. telecommunications industry dependence on foreign sources for high-technology components and systems was performed. These components and systems included the following:

- Semiconductor devices
- Telecommunications factory equipment
- Semiconductor factory materials
- Wireless products
- Fiber optic products.

Part of the analysis concluded that the stability and viability of U.S. manufacturing capability derive from the availability of materials used to build quality products. U.S. companies continue to divest themselves of low-profit materials production operations, while companies in the Pacific Rim engage in opportunities to invest in these operations. U.S. manufacturing facilities, therefore, assume significant risk due to their reliance on foreign supplies for materials required for telecommunications products. Interruption of supply remains a very real possibility. Consequently, the U.S. NS/EP telecommunications infrastructure

EXHIBIT 2-17

The Global Semiconductor Process Equipment Market



Source: VLSI Research

remains vulnerable.

With respect to competition, U.S. companies have successfully improved their competitive positions. Several companies have formed industry associations and partnerships commonly referred to as "The American Keiretsu." Examples of successful partnerships in the semiconductor industry include Sematech, Semi/Sematech, and the Semiconductor Industry Association. Other demonstrated successes, beyond just semiconductors, include formation of the Association of Public-Safety Communications Officials-International (APCO) Project 25, under the sponsorship of the Telecommunications Industry Association (TIA), and the HF Radio Industry Association, under the sponsorship of the Armed Forces Communications and Electronics Association (AFCEA).

Exhibit 2-17 illustrates the substantial lead that U.S. manufacturers enjoyed in the early 1980's. The loss experienced in the late 1980's and the resulting recovery are also illustrated. A turnaround began around 1990, shortly after the formation of the Sematech and Semi/Sematech partnerships.

Many experts in the NS/EP community consider telecommunications dependence on foreign sources a noteworthy issue, especially with respect to ensuring a reliable NII. Therefore, Section V, Telecommunications Issues, page 5-4, provides more detailed information on this issue.

Study and Analysis of Wide Band Gap Semiconductors for Potential NS/EP Applications

A study was performed to determine if wide band semiconductor material has characteristics that make nonvolatile memories possible. Recent improvements in material growth and device fabrication of wide band semiconductors, such as silicon carbonate (SiC) and gallium nitride (GaN), open new possibilities for these materials. Additionally, wide band semiconductors possess the very desirable electrical property of very low leakage current. The study revealed that, in theory, wide band semiconductor characteristics make nonvolatile solid state memory possible.

This conclusion led to an analysis to determine if nonvolatile memory development in Field Effect Transistors (FET) is feasible. Future development of nonvolatile memory for practical applications requires nonvolatile memory growth in a key electronic element, such as the FET. Therefore, any future implementation of nonvolatile memory applications will likely use FET's. A partial analysis concentrated on four FET areas:

1. **Transport Properties.** Calculations of both low field mobility and electron velocities in high electric fields were performed. Reasonable mobility values can be achieved at elevated temperatures. The electron saturation and peak velocities were very high.

2. **FET Analytical and Circuit Modeling.** The results indicate that the maximum current may be limited either by the ungated portion of the device or by the electron transfer at the heterointerface.

3. **Two-Dimensional Modeling of SiC FET's.** The results indicate that wide band gap FET's can be simulated. However, full simulation requires more information about material parameters. The results also confirmed that the breakdown phenomena in wide band FET's relate directly to surface, not bulk, breakdown.

4. **Capacitance and Leakage Studies Using Test Structures.** The results allow for prediction of the gate leakage, which is crucial to the formation of solid state nonvolatile memories.

Plans call for more extensive FET analysis in 1995. If this analysis indicates nonvolatile memory development with the FET is feasible, appropriate recommendations with respect to potential NS/EP applications will be made.

Analysis of Network Outages Reported to the FCC

The FCC requires telecommunications carriers to report all network failures that last at least 30

minutes and affect over 30,000 customers. These outages are caused by network equipment failure, fiber cuts, software failure, natural disasters, and human error. An outage report database details these reports in a manner that facilitates statistical analysis of the outages.

A methodology was developed to evaluate causes of network outages, track trends of network failures, and measure the probability of future network outages. The statistical technique inherent to this methodology is based on the concept of collective risk and regression analysis. Capabilities of this technique include prediction of outages, the associated probable impact on communications, and the identification of trends. These capabilities and valid network data afford the NCS a mechanism to make recommendations for the improvement of network reliability.

Network Congestion Modeling

A focused overload feature was added to an existing NCS software model called Traffic Assessment by Method of Iteration (TAMI). The model simulates voice traffic routed through local and long distance telecommunications networks. Additionally, the model performs congestion analyses. The focused overload feature was applied to study telecommunications infrastructure experiences during national disasters and to provide an NS/EP perspective of the following:

- Call completion probability
- Erlangs carried, both as a function of percent of engineered traffic and offered traffic.

Distributed Restoration System

A distributed restoration system for IEC facility restoration and provisioning was analyzed. Enhanced software, based on implementation control and routing algorithms from network management of stressed intelligent networks, was used. The analysis verified the feasibility of customer-driven, high-bandwidth connections for potential application to vital customer requirements. This system offers switched T1 service with a restoration time of 10 seconds under large system outage scenarios.

Access Interface Module

An access interface module study was performed in conjunction with the distributed restoration system study. The study determined that the best approach to link customers together with various applications is by providing a high-bandwidth on demand service. The study concluded with a recommendation to use an ISDN interface at either the primary or basic rate to control customers' access to high-bandwidth services. The study recommends use of the embedded Data Communications Channel (DCC) as the carrier of customer signaling messages when Synchronous Optical Network (SONET) local access exists. This high-bandwidth asynchronus service can be connected to high-bandwidth synchronous carrier (T1) for long distance transmission. Having completed the access interface study, the OMNCS identified a methodology to enhance interoperability between ATM and synchronous digital hierarchy.

Electronic Mail (E-Mail)

In accordance with NCS Vision 21 MFA II (Interoperability), the OMNCS initiated a pilot project on electronic messaging. This initiative provides the NS/EP community with the capability to exchange protected and unprotected messages, including binary and American Standard Code for Information Interexchange (ASCII) attachments. The OMNCS performed this task in concert with *GSA's Reinventing Government Laboratories, Governmentwide E-Mail Project.*

A fundamental part of this project was to test security aspects of E-Mail. The security features are provided by the FORTEZZA crypto-card (prototype name). FORTEZZA is based on Personal Computer Memory Card International Association (PCMCIA) technology. The FORTEZZA card with its value-added security services was developed by NSA under the MOSAIC program. Security features addressed in this E-Mail project were Type 2 encryption (unclassified/sensitive), signatures, authentication, nonrepudiation, and integrity. The features are defined as follows:

Encryption	Coding messages and message attachments so that they can be read only by the intended recipient.
Signature	A message can be digitally signed so that the recipient can verify that it was sent by the assumed sender.
Nonrepudiation	A by-product of the signature is that the sender cannot deny sending a message.
Integrity	When checking who sent a message, the receiver can verify that the message was not altered from the time it was signed by the sender.

As part of this project, the OMNCS developed and distributed an interoperability questionnaire, which was sent to the 23 NCS member organizations. Responses were received from all member organizations. The OMNCS and six NCS member organizations (DoD [C3I], DOI, FEMA, DOJ, GSA, and NASA) participated in the first phase of testing.

The results of the questionnaires were correlated. The OMNCS developed interoperability matrices of E-Mail, word processing, spreadsheet, and graphical software packages. NCS member organizations employ these matrices. An action plan was written as a result of OMNCS participation in GSA's Government Laboratories activities. PCMCIA card reader/writers were purchased and installed at the OMNCS, DoD (C3I), DOI, FEMA, and GSA. FORTEZZA crypto-cards have been programmed for the same organizations.

A beta version of Armor-Mail for Microsoft Mail was installed on a DoD (C3I) computer. The OMNCS submitted an Armor-Mail application for Microsoft Mail and Lotus cc:Mail. Testing in the protected mode was limited due to delay in the development of cc:Mail software. The OMNCS anticipates this software will be in beta version during early 1995.

High Definition Television (HDTV)

The OMNCS continued to follow the HDTV broadcast standardization process. In addition, the OMNCS continued to participate in standards efforts related to advanced digital video applications, such as video teleconferencing and multimedia telecommunications.

The FCC could adopt an HDTV standard as early as 1996. Adoption of a standard will likely occur if future tests provide satisfactory results and controversial issues do not arise. The FCC standard will specify parameters to enable broadcast of HDTV over-the-air, but within existing unused 6 megahertz (MHz) television channels. The standard will be based on technical development conducted by the Grand Alliance, which is a consortium of companies and organizations that submitted the four original all-digital HDTV proposals to the FCC.

Video Teleconferencing (VTC)

The OMNCS started to implement a VTC interoperability testing laboratory. When fully implemented, the laboratory will include multiple desktop VTC terminals from multiple vendors. The terminals will be configured to function over ISDN. The laboratory will enable the OMNCS to do the following:

- Gain more in-depth knowledge of complex VTC with hands-on experience. This experience will enable the OMNCS to better assist NCS member organizations with VTC.

- Test the degree of interworking among multivendor VTC terminals.

Laboratory test results will be used to supplement information provided by manufacturers for the following purposes:

- Conduct further VTC terminal testing to determine conformance to existing VTC standards

- Provide feedback to manufacturers on any interoperability or conformance problems that may arise
- Provide input to standards committees for resolution of problems
- Provide an opportunity for NCS member organizations without VTC capability to investigate VTC technology
- Provide NCS member organizations with VTC capability the opportunity to test different equipment.

STANDARDS

Participation in the development of Federal, national, and international standards continued under the auspices of the FTSP. Participation was in accordance with the standards provisions of E.O. 12472 and the Office of Management and Budget (OMB) Circular Number A-119, *Federal Participation in the Development and Use of Voluntary Standards,* dated October 20, 1993. The importance of standards has been emphasized by the Clinton Administration's IITF, where one of the nine NII goals is "seamless, interactive user-driven operations" through standards.

Federal Standards

Federal Telecommunication Standards Committee (FTSC). The FTSC, chaired by the Assistant Manager, NCS Office of Technology and Standards, continued to develop Federal telecommunications standards to meet specific Government NS/EP requirements. Federal telecommunications standards development was based not only on evolving commercial standards, but also on comments from industry, Government, and the public. Monthly committee meetings were held to review proposals for standards and to develop recommended positions that can be supported by Federal Government officials as members of national and international standards committees. Additionally, the committee coordinated proposed Federal telecommunications standards with manufacturers, State and local governments, and the public. The committee transmitted all fully coordinated proposed Federal telecommunications standards, through the Manager, NCS, and Executive Agent, NCS, to GSA or NIST, as applicable, for approval and publication. Refer to Appendix B, Exhibit B-8, for the status of recent Federal telecommunications standards.

The committee supervised the activities of all FTSC subcommittees. In addition, the committee approved a request from the Digital Telecommunications Quality Subcommittee for a change in charter and name. This subcommittee was created in 1991 to address problems in measuring and evaluating the performance and quality of service regarding digital telecommunications systems and services used by the Federal Government. Consequently, the subcommittee defined a set of telecommunications quality standards, conducted a program of measurement instrument development, and facilitated the exchange of measurement technology information within industry and Government. These accomplishments cleared the problems of measurement and evaluation that were the driving force for advocating the creation of the Digital Telecommunications Quality Subcommittee.

Having recognized these positive achievements and the need to address multimedia performance measurements, the FTSC rechartered the Digital Telecommunications Quality Subcommittee, effective October 1, 1994. The new subcommittee, designated Multimedia Telecommunication Performance Measurements Subcommittee, will address the elements of interoperability and performance with respect to multimedia information systems. The new subcommittee will also address, as appropriate, the performance of other digital telecommunications systems.

FTSC Subcommittees:

Digital Telecommunications Quality. The subcommittee initiated a project to develop a telecommunications performance handbook. When complete, the handbook will provide the following:

- Diagnostic tool capabilities
- Performance specifications for typical services
- Standard measurements for nontypical users to develop their own performance criteria.

Additionally, the subcommittee conducted telecommunications quality activities on the following:

- Developing prototype voice, video, and data test sets
- Developing an application of an ATM network emulator
- Automating interconnection of voice, video, and data performance measurement laboratories
- Demonstrating diagnostic instruments to representatives of industry, Government, and commercial standards committees
- Evaluating and promoting standardization of speech coding algorithms
- Providing support to the FTSC, Subcommittees of Telecommunications Committee T1, and Study Groups of the International Telecommunication Union (ITU).

These activities will improve specification of integrated services, enhance B-ISDN performance, and provide accurate voice transmission quality.

Fiber Optics. Subcommittee representatives participated in standards development activities of the TIA to facilitate development of new or revised Federal Information Processing Standards publications (FIPS PUB). These activities included the ongoing development or revision of a family of standards that collectively specify the telecommunications infrastructure of user premises. Standards of this infrastructure address components for a structured wiring and cabling system concerning user premises in a campus environment. The standards also address building architectures for telecommunications bonding and grounding and the administration of telecommunications facilities.

The subcommittee standards activities resulted in the publication of FIPS PUB 187 — *Administrative Standard for Telecommunications Infrastructure of Commercial Buildings.* Additionally, the subcommittee initiated development of a new FIPS PUB for backbone wiring. Refer to Appendix B, Exhibit B-9, for standards that address telecommunications infrastructures of user premises.

Subcommittee representatives also supported the fiber optics division of TIA and provided the expertise required to revise an entire hierarchy of optical fiber specifications, including detailed specifications targeted toward procurement. The FTSC anticipates the detailed specifications will be adopted as a future FIPS PUB.

Glossary of Telecommunication Terms. The subcommittee initiated and completed an analysis of approximately 4,000 proposed revisions to Federal Standard (FED-STD) 1037B — *Glossary of Telecommunication Terms.* The analysis encompassed modifications to existing terminology, the incorporation of new technology, and the incorporation of approximately 120 technical illustrations for proposed FED-STD 1037C. Plans call for industry and public comments on proposed FED-STD 1037C to commence in FY95.

High Frequency Radio. The subcommittee performed activities that included the following:

- Testing ALE functional calling tones on compact discs that contain degraded ALE calls simulating normal ionospheric propagation to facilitate implementation of FED-STD 1045 — *HF Radio Automatic Link Establishment*
- Testing a network protocol simulator for features and functions of FED-STD 1046 — *HF Radio Automatic Networking* and FED-STD 1047 — *HF Radio Automatic Message Delivery* with a network protocol simulator

- Testing and evaluating equipment for transmitting encrypted digital images over degraded narrowband HF channels

- Continuing refinement of a portable wideband HF channel simulator, which will contain capabilities for realistically testing advanced HF radios at manufacturers' plants and field area test sites

- Evaluating and testing anti-interference systems using channel evaluation techniques in support of FED-STD 1049—*HF Radio Automatic Operation in Stressed Environment*

- Combining features of two modem protocols into a single common protocol to support development of a proposed FED-STD 1052—*HF Radio Modems*

- Testing simple, inexpensive, transportable, broadband HF antennas to increase signal efficiency and facilitate deployments in support of SHARES.

These activities and previous Federal standards development efforts resulted in publication of three new FED-STD's for HF radio. (Refer to Appendix B, Exhibit B-8.)

Interoperability/Acquisition Standards Database. The subcommittee commenced full operational capability of an automated on-line resource that correlates telecommunications standards with specific technical requirements. The resource, designated as the *Telecommunications Standards Acquisition Resource* (TSAR), simplifies statement-of-work (SOW) preparations for Federal acquisition personnel.

Land Mobile Radio (LMR). The subcommittee focused on participation in the development of new digital 12.5 KHz bandwidth technical standards for the next generation of public safety radios with the cooperation of industry and Government. A subcommittee member continued to play a key role in LMR standards development by serving as one of the three Federal representatives to the Government Project 25 steering committee. (State and local government representatives compose the remainder of steering committee representatives.)

In a related effort, the subcommittee used a number of Project 25 standards to form the basis for five proposed interim FED-STD's for LMR. These interim FED-STD's were announced in the *Federal Register* for industry and public comment. Refer to Appendix B, Exhibit B-10, for a list of the LMR interim FED-STD's.

Meteor Burst Communications. Three new meteor burst FED-STD's were approved for publication by GSA on May 13, 1994. Refer to Appendix B, Exhibit B-11, for a list of these meteor burst FED-STD's.

Commercial Standards

To improve NS/EP telecommunications interoperability, the OMNCS participated in national and international standards organizations that develop commercial standards. These organizations base standards development on global state-of-the-art technology. The development of commercial standards will result in telecommunications infrastructures that far exceed the capabilities and features that exist today. Commercial standards participation focused on enhancing NS/EP telecommunications through technology. The OMNCS participated in the following technical focus areas:

- Narrowband ISDN

- B-ISDN, including key technologies of ATM and SONET

- Facsimile

- Multimedia (e.g., videoconferencing, imagery)

- Telecommunications Management Network (TMN), including functional areas of monitoring, interpreting, and controlling the network

- PCS

- Signaling, including SS7 and Meta-signaling.

Multimedia Standards Assessment. Multimedia consists of new technologies that allow the integrated presentation of interactive audio, video, graphics, and test-oriented data at a relatively low cost. These developments portend new and innovative ways of organizing and effectively communicating information needed to mitigate the complexities of a national crisis or time-sensitive problem solving situations.

Recognizing the importance of standards for an orderly and timely introduction of new technologies, the OMNCS and the Center of Technology, Policy, and Industrial Development at the Massachusetts Institute of Technology initiated a joint project to identify major standardization issues that could impede the practical realization of multimedia communications. This project includes assessing the adequacy of current national and international standards development activities. A strategy for specific NCS intervention in NS/EP multimedia standardization issues or shortfalls will be developed to ensure that NS/EP multimedia standards objectives are met. The OMNCS is already an active participant in the following national and international multimedia standardization groups and fora:

- ITU-T Study Group 1 (Service Descriptions)
- Multimedia Communications Forum
- TIA TR-29 (Audiographics Conferencing)
- T1A1 (Performance and Signal Processing).

National Standards

Participation in the development of national commercial standards centered on three key standards organizations. These key national standards organizations include the Alliance for Telecommunications Industry Solutions (ATIS [the successor to the Exchange Carriers Standards Association]), the TIA, and the Institute of Electrical and Electronics Engineers, Inc. (IEEE). Information on specific participation appears in Appendix B, Exhibits B-1 through B-3.

Participation in standards development activities of ATIS encompasses official voting membership responsibilities during standards committee plenary sessions and during the organization's standards letter ballot process. The OMNCS reviewed, commented when appropriate, and voted on a large number of proposed standards through the letter ballot process. Refer to Appendix B, Exhibit B-12, for numerical information on the extent of letter ballots with respect to specific ATIS committees and subcommittees.

International Standards

Participation in the development of international commercial standards centered on two key standards organizations where OMNCS technical personnel serve as official U.S. delegates. These key international organizations are the ITU and the International Organization for Standardization (ISO)/International Electrotechnical Commission (IEC) Joint Technical Committee (JTC 1). Additional information about these organizations appears in Appendix B, Exhibits B-4 through B-5.

Additional international standards development efforts focused on the International Telecommunications Advisory Committee (ITAC). OMNCS technical personnel provided advice and expertise on proposed international standards, including official international standards letter ballot voting by DOS. (Refer to Appendix B, Exhibit B-4 for information on ITAC.)

ADMINISTRATIVE SUPPORT ACTIVITIES

The EOP instructed NCS member organizations to execute MOA's and interagency funding agreements (IFA) with the Manager, NCS, regarding personnel and funding support for NCS initiatives. The OMNCS continues to coordinate, control, and maintain records of these agreements and other information resources on behalf of the NCS. Below is a summary of personnel, non-NLP funding, and information resource assets managed by the OMNCS.

PERSONNEL SUPPORT

Pursuant to E.O. 12472, Section 3, paragraph (i), subparagraph (3), MOA's with the Manager, NCS, regarding personnel support to fill important

EXHIBIT 2-18

Personnel Support From NCS Member Organizations

Member Organization	Personnel Per MOA	Personnel Furnished	Remarks
DOS	2	2	
Treasury	1	1	
DoD (Total)	104	96	Positions Filled Per DoD Authorizations as of 30 September 1994
U.S. Army	10	10	
U.S. Navy	2	1	1 Vacant
U.S. Air Force	11	7	4 Vacant
Civilian	76	73	3 Vacant
DISA	5	5	DISA Comptroller Personnel Supporting Manager, NCS (now NCS Employees as of 8/94)
DOJ	1	1	
DOI	N/A	N/A	No MOA in Place
USDA	1	1	
DOC	N/A	N/A	No MOA in Place
HHS	1	1	
DOT (Total)	2	1	One Vacant Position Per MOA
U.S. Coast Guard	1	0	DOT Vacancy Position Per MOA
FAA	1	1	DOT Filled Position
DOE	1	1	
VA	1	0	One Vacant Position Per MOA
CIA	2	2	
JS (see DoD)	N/A	N/A	Personnel Support From DoD
GSA	2	2	Other GSA-Furnished Personnel: • Four reserve on-call to NCC • Eleven part-time regional communications managers of which four are full-time planners
USIA	N/A	N/A	No MOA in Place
NASA	2	2	
FEMA	2	1	One Vacant Position Per MOA One Position Assigned to NCC
FCC	1	1	
NRC	N/A	N/A	No MOA in Place
USPS	N/A	N/A	Liaison Membership Status; No Support Requirements
FRB	N/A	N/A	Liaison Membership Status; No Support Requirements
NSA	1	1	
NTIA	N/A	N/A	No MOA in Place

OMNCS staff positions were executed by NCS member organizations. Exhibit 2-18 depicts personnel support provided to the Manager, NCS, by each member organization at the close of the reporting period.

OMNCS Augmentee Program

The development of the augmentee program, which was formalized in 1988, continues. This program is composed of the National Defense Executive Reserve (NDER) and the U.S. Department of the Army's Individual Mobilization Augmentee (IMA) Program. The augmentees supplement existing staff within the OMNCS and at regional locations during national emergencies or crises.

National Defense Executive Reserve. The NDER's are experienced business executives and other civilian personnel who are recruited and trained to serve in key Government positions during periods of national emergency. The OMNCS NDER unit is a force multiplier within the NTMS. The NCS NDER unit has 35 members who participate in OMNCS-sponsored training activities at the national regional level during the year. One NDER volunteered 14 staff days to support the national response effort for the Northridge earthquake. His contribution significantly reduced the suffering of thousands of disaster victims.

Individual Mobilization Augmentees. The IMA program provides a cadre of skilled U.S. Army Reserve officers to augment the staff of the OMNCS during national emergencies and crises. These officers are an integral part of the Office of Emergency Preparedness. The OMNCS is authorized 40 IMA field grade officer positions. They participate in OMNCS, FEMA, GSA, and military-sponsored training and exercises at the Federal, State, and local level throughout the year. They train at the State and local level as well. The IMA's are crucial to the Nation's preparedness, and provide an extremely important and invaluable service to the OMNCS NS/EP mission.

In November 1993, three IMA's assisted the regional Federal Emergency Communications Coordinator (FECC) with the provisioning and restoration of NS/EP telecommunications during the California fires. Collectively, they contributed 45 staff days to the response effort. Ten IMA's were deployed in response to the Northridge earthquake in southern California as part of the ESF 2 (Emergency Communications Staff). They contributed more than 250 staff days, and ensured the continued search for the earlier availability of communications for the integrated Federal and State DFO's and 21 DAC's.

In April 1994, one IMA served as the FECC for 5 days in response to a flood emergency in Miami, Oklahoma. He coordinated the installation of NS/EP telecommunications for the DFO and conducted the initial infrastructure damage assessment. OMNCS IMA's were called on again in July 1994 to support the national response to the flooding in Georgia. Three IMA's contributed 45 staff days.

NON-NLP FUNDING

NCSD 2-2, *National Level NSEP Telecommunications Program (NLP) Funding,* was revised to reflect funding of non-NLP NCS initiatives and programs. The directive introduces a provision that allows for alternative funding agreements between two or more NCS member organizations and the OMNCS to undertake and share funding of approved non-NLP NCS initiatives and programs.

NCS INFORMATION ASSETS

In performing its management functions, the OMNCS coordinated and maintained NCS issuances, published the *NS/EP Telecom News,* promoted the electronic transfer of information through E-Mail and NCS BBS, and managed its information resources.

NCS Issuance System

The NCS Issuance System governs policy and guidance that concern the internal organization, policies, procedures, practices, management, and/or personnel of the NCS. The following NCS issuances were addressed this year:

- NCSD 4-3, *Interoperability of Telecommunications in Support of National Security and Emergency Preparedness (NS/EP)*
- NCSD 2-2, *National Level NSEP Telecommunications Program (NLP) Funding*
- NCSM 3-3-1, *Shared Resources (SHARES) High Frequency (HF) Radio Program User Manual*
- NCSH 3-3-1, *Shared Resources (SHARES) High Frequency (HF) Radio Program Directory,* 5th edition.

"NS/EP Telecom News"

The *NS/EP Telecom News,* published bimonthly by the OMNCS, provides an NS/EP impact assessment for the NCS and NS/EP telecommunications community, and helps the NCS member organizations keep abreast of legislative, regulatory, judicial, technological, and executive developments. This year, the *NS/EP Telecom News* published the following for its readership:

- In-depth discussions of PCS and wireless communication services, encryption technologies, legislative and regulatory issues, and spectrum allocation
- Continual updates on issues related to the NII
- Profiles of senior Government telecommunications managers such as Mr. Jim Flyzik, Department of the Treasury; Mr. John Clark, Department of State; Ms. Nada Harris, Department of Veterans Affairs; Mr. Timothy Patterson, United States Postal Service; and Dr. David Signori, the Deputy Director of DISA and Vice Manager, NCS.

Electronic Mail (E-Mail)

The OMNCS investigated the use of E-Mail to more efficiently conduct daily operational activities among the NCS member organizations and the OMNCS staff. Major accomplishments during FY94 include:

- Successful E-Mail interoperability with 19 NCS member organizations using the Simple Mail Transport Protocol (SMTP) Internet gateway from the DISA Network (DISANet).
- Establishment of a cc:Mail to cc:Mail automated dial-up gateway between the NCS and DOI, GSA, and FEMA.

Pending actions during FY94 include:

- OMNCS participation in a pilot project for the establishment and utilization of X.400 E-Mail service between the NCC and FEMA using the FTS2000 communications network with eventual extension to other X.400/FTS2000-equipped organizations.

NCS Bulletin Board System (BBS)

The NCS BBS was designed to help manage NSTAC-, COP-, and COR-related activities. The NCS BBS is on-line 24 hours a day, 7 days a week, and has three lines that are capable of operating at 14,400 baud. The numbers to access the NCS BBS are (703) 607-4827, 4828, 4829. The NCS BBS continues to provide the following useful capabilities:

- **Messaging:** The ability to exchange messages among users of the NCS BBS.
- **Files:** The capability to upload and download files for participants of the NCS BBS to read.
- **Bulletins:** The bulletins portion of the NCS BBS includes a list of rules/policy of the NCS BBS, an electronic version of *NS/EP Telecom News,* information on whom to call for assistance, a calendar of upcoming NSTAC and NCS scheduled events, a listing of E-Mail addresses for COP/COR members, and an up-to-date copy of the *OMNCS Telephone Directory.*

An electronic version of the *FY93 NCS Annual Report* and its distribution list were introduced this year. It will continue to be available on the NCS BBS.

Information Resource Management (IRM)

The OMNCS performed its annual update to the *IRM Long-Range Plan.* This plan defines the vision, goals, objectives, and initiatives required to achieve them. It also includes the funding, prioritization, and policy issues for selecting initiatives for technology insertion or technology refreshment. This plan will result in integration of technologies such as electronic imaging, process and data modeling tools, configuration management tools, enhanced processing platforms, client/server processing, Combined Computer Facility (CCF) heterogeneous

database access, and multimedia capabilities. The *IRM Long-Range Plan* was provided to OMB in conformance to requirements specified in *OMB Circular A-130.*

Office of Chief Information Officer Collaboration (OCIO). The OMNCS worked closely with the OCIO within DISA to ensure proper administration of IRM activities within the organization in compliance with OMB and DoD guidance and regulations. Members of the OMNCS Information Systems Division are permanent members of numerous agency working groups that focus on comprehensive solutions to common areas of interest.

Procurement Administration. The OMNCS continues its function as the central procurement manager of its IRM activities. Procurement management includes specifications development through product delivery/installation of all hardware, software, and data purchases within the OMNCS. Major accomplishments during FY94 included:

- Two large procurements for an electronic imaging system and a crisis management system for telecommunications crisis management
- Numerous procurement for such media items as notebook computers, laser printers, disk drives, fax machines, and large software packages
- Sixty-eight procurement actions for a total of 247 small items such as software packages, computer boards, printer and tape cartridges, modems, mice, and cables.

Property/Maintenance Administration. The OMNCS continues to function as the central manager for IRM property management and equipment maintenance. Major accomplishments during FY94 include:

- Donation of six MicroVAX II computers to Howard University and the donation of 136 personal computers (PC) to schools in Louisiana, Tennessee, and Maryland.
- Development of an automated inventory tracking system (ITS) for effective property accountability.

Resource Center. The OMNCS maintains an IRM Resource Center that contains specialized hardware, software, and documentation for use by NCS member organizations, DISA, and the OMNCS staff. The resource center also has a reference library of periodicals, video products, education courses, and conference proceedings dealing with the information technology field. The resource center received numerous enhancements during the year. Major accomplishments during FY94 include:

- The addition of two CD-ROM readers, because a significant amount of reference material is being produced on this medium.
- The addition of seven 486 color PC notebooks for home or temporary duty (TDY) use with dial-in capabilities for remote DISANet access.
- The addition of four portable printers for home or TDY use.
- The addition of a fax board and a laser printer for one of the two desktop computers.
- Certification of both desktop computers for classified processing.
- The addition of stand-alone software packages for the standard DISANet office automation packages consisting of Windows versions of WordPerfect, cc:Mail, Paradox, Lotus 1-2-3, and FreeLance.
- The addition of stand-alone Windows software packages consisting of Norton Utilities, Lotus Organizer, Perform, WinFax Pro, Word, WordScan, Project Workbench, Calendar Creator Plus, PowerPoint, PCAnywhere, ST420, and PKZIP.

III. NS/EP TELECOMMUNICATIONS POLICY AND REGULATORY DEVELOPMENTS

EXECUTIVE

Information Infrastructure Task Force (IITF)

The IITF was formed to define and implement the Administration's vision of the NII. The IITF, chaired by Secretary of Commerce Ronald H. Brown, is composed of high-level representatives of Federal agencies that develop and implement information and telecommunications technology and policy. The role of the IITF is to work with Federal agencies and develop a consensus on critical implementation and development issues. The majority of the IITF activities are conducted through its committees and working groups: the Information Policy Committee, the Telecommunications Policy Committee, the Applications and Technology Committee, and the NII Security Issues Forum. These groups are shown in Exhibit 3-1.

- The Information Policy Committee includes the Intellectual Property Working Group, the Privacy Working Group, and the Government Information Working Group. The committee identifies and develops information policy that will enhance the NII and allow the infrastructure to develop to its full potential.

- The Telecommunications Policy Committee includes the Universal Service Working Group, the Reliability and Vulnerability Working Group, and the International Telecommunications Working Group. The committee identifies and analyzes current technological, industry, and regulatory developments and formulates the Administration's position on key telecommunications issues that develop from these areas.

- The Applications and Technology Committee includes the Government Information Technology Services Working Group, the Technology Policy Working Group, and the Health Information and Applications Working Group. The committee coordinates the Administration's efforts to develop, demonstrate, and promote applications of the NII. In addition, the committee develops and recommends strategy and policy to accelerate the implementation of these applications.

- The NII Security Issues Forum coordinates security activities between various committees of the IITF and serves as the main information source for security-related issues within the NII.

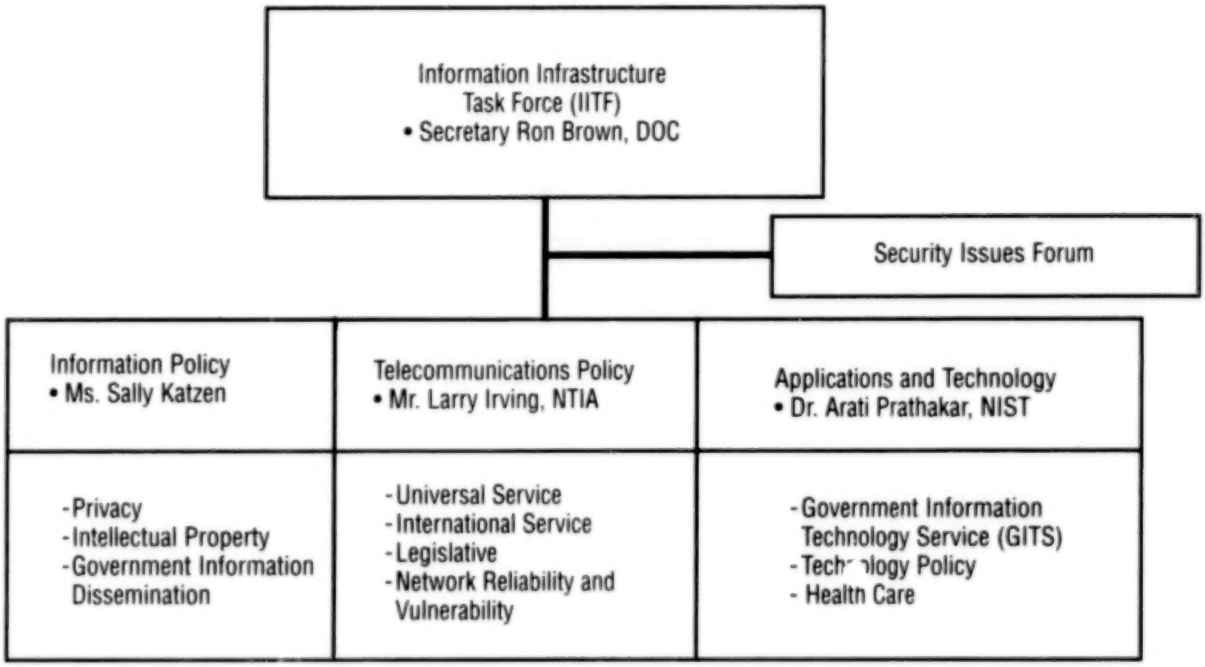
This year, the IITF made significant progress in identifying and developing goals that outline the Administration's vision for the NII.

- Throughout the year, the task force held public hearings across the country to gather input on the best way to implement or expand the concept of universal service.

- The Applications and Technology Committee drafted *What it Takes to Make it Happen: Key Issues for Applications of the NII.* This paper

Exhibit 3-1

The Information Infrastucture Task Force



focuses on various topics critical to the development of the NII.

- The Technology Policy Working Group drafted a report entitled *Open Systems Environment Framework for NII Services and Standards,* which focuses on interoperability and scalability of new telecommunications and information services.

- The Privacy Working Group is updating information privacy principles and has written a document entitled *Principles for Providing and Using Personal Information,* which focuses on protecting the privacy of individuals.

- The Security Issues Forum has been working with industry and public interest groups to explore ways of developing new encryption technologies and to develop and communicate the Administration's policies regarding encryption.

- The Applications and Technology Committee is currently directing a project that is cataloging major telecommunications projects within the Federal Government.

- The Reliability and Vulnerability Working Group has drafted several papers on improving the reliability of the NII and ensuring that national security and emergency preparedness requirements are met. The group has identified industry and Government groups that will facilitate their recommendations.

JUDICIAL

Modified Final Judgement (MFJ)

In January 1982, AT&T and DOJ announced an agreement on a plan to settle the longstanding Government antitrust case against the Bell System. The agreement called for the divestiture of the Bell Operating Companies (BOC) from AT&T. Under the terms of the MFJ, AT&T relinquished ownership and control of the BOC's, and retained ownership of Bell Labs, its manufacturing arm (Western Electric, later named AT&T Technologies), and its long distance operations (AT&T Long Lines,

later named AT&T Communications). On January 1, 1984, the 22 local BOC's were officially separated from AT&T and regrouped under seven separate and independent regional holding companies known as the Regional Bell Operating Companies (RBOC).

The initial implementation of the MFJ was only the start of the long process of reintroducing competition into the telecommunications market. The legislative and regulatory framework continues to evolve on multiple fronts. Since the divestiture of AT&T, MFJ restrictions have been weakened by a series of judicial and regulatory measures. Despite efforts in Congress to overhaul the *Communications Act of 1934* and soften measures of the MFJ in FY94, the primary focus remains in the courts and with State regulators, where the industry players are seeking to cross over into new markets. Examples of possible modifications to the MFJ include the RBOC's seeking permission to enter cable television, long distance service, and equipment manufacturing markets and long distance companies positioning themselves in cellular markets and the local exchange. Several major actions occurred this year:

- Bell Atlantic, Southwestern Bell, NYNEX, and BellSouth filed a motion in the U.S. District Court for relaxation of regulatory restrictions. The four companies are seeking to overturn the MFJ section prohibiting them from manufacturing equipment and supplying long distance services.

- NYNEX is seeking approval to provide long distance service for calls originating in New York. NYNEX cited widespread local telephone service competition in New York and sweeping legal, technological, and regulatory changes as primary reasons for their request.

- Judge Harold R. Greene allowed the merger of AT&T and McCaw Cellular despite challenges from the Bell companies on AT&T and McCaw's use of proprietary networks and crossing restrictive lines of business. Details of the merger are still being worked out by Judge Greene, DOJ, and the Bell companies.

REGULATORY

Spectrum Allocation

The FCC developed a plan to auction 2,000 narrowband and broadband PCS licenses. A major portion of the plan detailed a provision that allowed rural telephone companies, minority-owned and small businesses to participate in the auction process. In the first round of competitive bidding, the FCC auctioned 10 nationwide narrowband PCS licenses (wireless paging and messaging services) on August 1, 1994, for an unprecedented $617 million. Broadband PCS auctions are tentatively scheduled to occur in December 1994. Estimates indicate these auctions will raise several billion dollars for the U.S. Government.

Network Reliability Council (NRC)

The NRC, consisting of representatives from service providers, manufacturers, user groups, and the Government, was established by the FCC in February 1992, in the wake of several major telephone outages. The NRC was given a 2-year charter to address network reliability and service issues. Upon completing its 2-year charter, the FCC acknowledged that network reliability continues to be a major issue and delayed disbanding the council for at least 2 years.

This decision allows the NRC to continue to monitor reliability issues and make recommendations to the IITF. Furthermore, the rechartered council includes five new focus panels. In February 1994, the new panels were established and addressed (1) network reliability performance; (2) reliability issues raised by increasing carrier interconnections; (3) reliability issues raised by changing network technologies; (4) implications of network outages for essential health, safety, and other emergency communications; and (5) the geographic and demographic impact of network outages. In addition, the OMNCS, in conjunction with the NRC's Steering Committee, and the RVWG are also currently researching issues relating to network reliability.

State Developments

Several State lawmakers and regulators are attempting to open up telecommunications markets in their States to full competition. Due to delays in initiating national telecommunications legislation, the RBOC's and competitive access providers (CAP) are expected to focus efforts on State regulators to win permission to compete in any telecommunications market. State actions regarding telecommunications competition are described below.

On April 25, 1994, the Maryland Public Service Commission (PSC) granted MFS Intelenet, Inc.'s application for "co-carrier" status as a local exchange service provider. The decision authorizes MFS to provide switched interexchange and local exchange services on a facilities and resale basis. The decision also orders Bell Atlantic to interconnect competing local exchange networks to its tandem and central office switches. In addition, the PSC directed Bell Atlantic to offer "physical" or "virtual" collocation in its central offices for competitors' switched interexchange access and local exchange access facilities. MFS was also granted waivers from some of the regulatory requirements that apply to the dominant local exchange carriers. In its decision, the PSC noted that "technological developments underscore the fact that local exchange competition is here and will remain, in some form, regardless of what we do in this proceeding."

On August 23, 1994, the California Senate passed a measure that would require the California Public Utilities Commission (PUC) to open the State's interexchange markets to full competition between the IEC's and the two LEC's, Pacific Bell and GTE. The measure states that the PUC "shall order, no later than October 1, 1995, all telephone corporations subject to restrictions in the MFJ to offer full intrastate interexchange service." The order does not take effect until the MFJ is amended to allow the LEC's to compete in the interLATA market. If the Federal court still prohibits full interLATA service competition, the measure requires that the affected LEC's seek a waiver of the interexchange telecommunications service restrictions from the Federal court overseeing the MFJ. If the Federal court denies the waiver request, the PUC may rescind its competition order only after all appeals have been exhausted.

LEGISLATIVE

Antitrust and Communications Reform Act of 1994, H.R. 3626

This bill would have allowed the RBOC's to compete in the cable industry and the cable industry to offer local telephone service. In addition, it would have allowed the RBOC's to offer long distance services, design and manufacture telecommunications equipment, and offer electronic information services — markets they were banned from entering following divestiture. The bill called for the filing of applications to enter these markets; these applications would have required the approval of both the FCC and DOJ. The bill included antitrust provisions to protect the newspaper industry, if and when the RBOC's entered the electronic publishing market. These protections involved rules for fair competition and guarded against possible antitrust abuses by stipulating that the RBOC's could participate in electronic publishing only through joint ventures, as long as their control did not exceed 50 percent, or through affiliates that were not involved in the local exchange market.

However, H.R. 3626 was tabled without further discussion because S. 1822 (its companion bill in the Senate) was halted by its sponsor, Senator Ernest Hollings (D-SC). Industry experts believe that a bill, similar in language, will be introduced in the next congressional session.

The Communications Act of 1994, S. 1822

This bill was intended to overhaul the Communications Act of 1934 and open up the telecommunications industry to full competition. Introduced by Senator Hollings as the Senate version of H.R. 3626, this bill would have allowed the RBOC's to offer long distance, cable, and

electronic services, and to manufacture communications equipment. The bill would also have allowed crossover of cable companies into the local exchange market, and the LEC's into the cable business.

In exchange for opening these markets, the bill required the RBOC's to open their infrastructures to competition before they were allowed to offer any type of long distance services. Under this provision of the bill, both the FCC and DOJ would have approval authority over petitions (applications) from the RBOC's before a LEC could provide interLATA service. The FCC will review this application under a public interest test. DOJ will review the application under the same VIII(c) test that is contained in the MFJ.

This bill actually set tougher standards for the RBOC's to enter the long distance market than its counterpart, H.R. 3626. The bill was halted by Senator Hollings because of opposition from several groups. Industry experts believe a similar bill will be introduced during the next congressional session.

Electronic Freedom of Information Improvement Act of 1994, H.R. 4917

If passed, H.R. 4917 would require Federal departments and agencies to make available via electronic means, including CD-ROM, more information about their regulatory activities and rulings. Agencies would be allowed to charge for public access to this information. The bill was introduced August 8, 1994, and is currently in committee.

Telecommunications Services Enhancement Act of 1994, S. 2111

This bill was introduced by Senators John Breaux (D-LA) and Bob Packwood (R-OR) as an amendment to S. 1822. In mid-September, the bill was fully merged into S. 1822. The amendment called for the simultaneous lifting of barriers to competition in all telecommunication markets, including all types of long distance service, local telephone service, and cable TV service.

Several major provisions of the bill called for the removal of State and local entry barriers to providing interstate or intrastate telecommunications services, the removal of the MFJ interLATA restrictions, and the institution of regulatory parity between IEC's and the LEC's, as well as cable television operators. In addition, the bill sought to ensure that the LEC's and cable television companies were able to enter each other's market at the same time, but disallowed cable operators from providing telephone service or long distance access service in their cable operating area until the local telephone companies were allowed to provide video programming over their phone lines. It is foreseen that this bill, or portions of this bill, will be introduced in the next congressional session.

The Digital Telephony Bill of 1994, S. 2375

Introduced by Senator Patrick Leahy (D-VT), this bill ensures that law enforcement officials can continue to conduct electronic surveillance as emerging telephony technologies evolve. Under the bill's provisions, LEC's will be required to have sufficient capacity to execute all electronic surveillance orders. Furthermore, local exchange carriers must also provide the capabilities to immediately isolate the content of targeted communications transmitted within their service area, and immediately isolate information about the origin and destination of a targeted call. In addition, the LEC's will be required to send intercepted information to a point designated by law enforcement officials, without the knowledge of the surveillance targets. The bill is currently in committee. A similar bill in the house, HR 4922, is also in committee.

IV. NS/EP TELECOMMUNICATIONS SUPPORT AND ACTIVITIES OF NCS MEMBER ORGANIZATIONS

OVERVIEW

The NCS is a confederation of the telecommunications assets of the 23 Federal departments and agencies represented on the COP. The NCS administrative structure consists of an Executive Agent, NCS, COP, and Manager, NCS. The COP is composed of high-level Government officials representing Federal operational, policy, regulatory, and enforcement organizations. Its diverse representation embraces the full spectrum of Federal telecommunications assets and responsibilities. The COP provides a unique interagency forum for understanding and responding to NS/EP telecommunications issues.

This section presents submissions by the 23 NCS member organizations concerning their NS/EP telecommunications activities during FY94. These reports review members' NS/EP accomplishments and technical concerns. Review of the individual reports discloses meaningful trends in Federal telecommunications management, operation, and planning.

Member reports are organized in the following format:

- NS/EP Telecommunications Mission
- Telecommunications Staff Organization
- Significant Accomplishments
- Current/Ongoing NS/EP Telecommunications Activities
- Pending Issues (where applicable).

Member reports continue to show a trend toward more consolidated telecommunications services to meet organizational NS/EP requirements.

Reports also reflect the importance members place on survivable telecommunications resources for uninterrupted performance of their organizations' essential functions under an all-hazards environment. Member organizations' active participation in the COP, COR, and interagency subcommittees allows them to upgrade and expand existing systems and resolve pending NS/EP telecommunications issues.

In addition to the reports presented, DOS and CIA reports are available in a classified supplement, which can be obtained upon request and approval by DOS and CIA. Approval of requests submitted to the OMNCS, is based on a "need-to-know" basis that must be stated in all requests.

NCS PRIMARY ASSETS

The following is a list of selected NCS primary assets, arranged in protocol order by NCS member organization and then alphabetically by asset.

DEPARTMENT OF STATE

- Diplomatic Telecommunications Service
- Nuclear Risk Reduction Center

DEPARTMENT OF THE TREASURY

- Consolidated Data Network
- Digital Telecommunications System

- Treasury Enforcement Communications System
- Wireless and Radio Support Service

DEPARTMENT OF DEFENSE

- Advanced Research Projects Agency (formerly the Defense Advanced Research Projects Agency) Network
- Defense Data Network
- Defense Message System
- Defense Satellite Communications System
- Defense Switched Network
- Direct Communications Link (Washington-Moscow Hotline)
- Future Secure Voice System
- Joint Chiefs of Staff Alerting Network
- National Military Command System
- Washington Area Wideband System
- Worldwide Military Command and Control System

DEPARTMENT OF JUSTICE

- Automatic Data Processing Teleprocessing System
- Drug Enforcement Administration Nationwide Very High Frequency Radio System
- Drug Enforcement Administration Secure Voice System
- Immigration and Naturalization Service Tactical Radio System
- Immigration and Naturalization Service Integrated Network Communications
- Justice Network
- Justice Telecommunications Service
- National Crime Information Center
- U.S. Marshal Service Communications System
- U.S. Marshal Service Special Operations Group

DEPARTMENTS OF THE INTERIOR AND AGRICULTURE

- Boise National Fire Center Transportable Radio Cache (Joint)

DEPARTMENT OF COMMERCE

- Automation of Field Operations and Services
- National Oceanic and Atmospheric Administration Weather Radio

DEPARTMENT OF TRANSPORTATION

- Emergency Transportation Radio Network

Federal Aviation Administration

- Aeronautical Fixed Telecommunications Network
- Aeronautical Message Circuits (Service B)
- Electronic Tandem Network
- Emergency Voice Communications System
- Integrated Communications Switching System
- National Airspace Data Interchange Network
- National Airspace System Network
- National Radio Communications System
- Radar Microwave Link Trunking

- Radio Communications Link
- Television Microwave Link
- Voice Switching and Control System

United States Coast Guard

- Hybrid Data Network
- Long-Range Aid to Navigation
- Medium Frequency and High Frequency Long-Range Radio: Medium Frequency Single Side Band Distress System
- Message Transfer and Distribution System
- OMEGA
- Operations Information System
- Radio Communications Systems
- Search and Rescue Telephones
- Secure Command and Control Network
- Transportable Communications Centers
- Very High Frequency and Ultra High Frequency: National Very High Frequency-Frequency Mode Distress System
- Vessel Traffic Services

Federal Highway Administration

- Federal Highway Administration Emergency Communications Systems

DEPARTMENT OF ENERGY

- Nuclear Emergency Search Team/Aerial Measuring System
- Secure Automatic Communications Network

DEPARTMENT OF VETERANS AFFAIRS

- California Emergency Radio Communications Network
- Veterans Affairs High Frequency Emergency Radio Network
- Veterans Affairs Nationwide Teleconferencing System
- Veterans Affairs Wide Area Network

JOINT STAFF

(See Department of Defense)

GENERAL SERVICES ADMINISTRATION

- Aggregated Services Procurements
- Federal Telecommunications System 2000
- Federal Secure Telephone Service
- Washington Interagency Telecommunications System
- One Technical Support Contract
- One Hundred and Ninety-nine Regional Consolidated Local Centrex Service Arrangements
- One Hundred and Twenty-five Government-owned Local Service Arrangements
- Ten Purchases of Telephone Services Contracts

UNITED STATES INFORMATION AGENCY

- Voice of America

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

- National Aeronautics and Space Administration Operational Communications System
- National Aeronautics and Space Administration Program Support Communications Network
- National Aeronautics and Space Administration Tracking and Data Relay Satellite System

FEDERAL EMERGENCY MANAGEMENT AGENCY

- FEMA Switched Network
- FEMA Local and Wide Area Network
- FEMA National Radio System
- FEMA National Emergency Coordination Net
- National Warning System
- Emergency Broadcast System
- FEMA National Automated Message System
- FEMA Facsimile and Record System
- Emergency Education Network
- FEMA Frequency Management System

Mobile/Deployable Assets

- Federal Emergency Support Capability
- Mobile Emergency Response Support
- Mobile Air Transportable Telecommunications System
- Information Display System

NUCLEAR REGULATORY COMMISSION

- Emergency Notification System

UNITED STATES POSTAL SERVICE

- U.S. Postal Service Data Network

NATIONAL SECURITY AGENCY

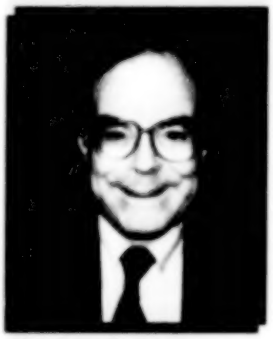
(See Department of Defense)

NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION

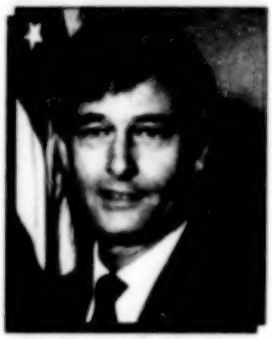
(See Department of Commerce)

DEPARTMENT OF STATE (DOS)

This report is included as part of the CLASSIFIED supplement to the FY94 NCS Annual Report.



MR. JOHN E. CLARK
Committee of Principals



MR. WILLIAM E. BISCHOFF
Council of Representatives

DEPARTMENT OF THE TREASURY (TREAS)

NS/EP TELECOMMUNICATIONS MISSION

The essential functions of TREAS requiring NS/EP telecommunications are summarized as follows:

- Protecting the President, Vice President, their families, and other dignitaries
- Managing the economic activities of the United States, including all monetary, credit, and financial systems
- Administering the laws pertaining to customs, taxes, alcohol, tobacco, and firearms
- Serving as principal economic advisor to the President
- Accomplishing international economic and monetary control as it pertains to the well-being of the Nation
- Manufacturing currency, coins, and stamps, and establishing methods of exchange.

TELECOMMUNICATIONS STAFF ORGANIZATION

TREAS telecommunications are managed through the Office of the Deputy Assistant Secretary for Information Systems, under the Assistant Secretary of the Treasury for Management. Under this office, the Director, Office of Telecommunications Management (OTM), oversees NCS liaison and NS/EP support activities. The Director, OTM, also provides management guidance and financial oversight to improve the Department's use of telecommunications systems. OTM ensures that TREAS bureaus have access to a cost-effective, technologically sound telecommunications infrastructure so that the bureaus may carry out their missions. This is done through the exercise of program management authority over the telecommunications operational activities of the departmental offices and TREAS bureaus.

Mr. James J. Flyzik
Committee of Principals

Mr. William H. Wunderlich
Council of Representatives

The Director, OTM, is the chairman of the GITS Working Group. In this capacity he is responsible for the development of Information Technology applications to improve the performance of the Federal Government within the framework of the *National Performance Review*. The GITS affords significant opportunities to examine and enhance national security and emergency preparedness, with emphasis on law enforcement and security initiatives and programs.

SIGNIFICANT ACCOMPLISHMENTS

TREAS realized the following NS/EP telecommunications achievements:

- Championed the inclusion of a GITS initiative for the FLEWUG. Accomplished the signing of a joint agreement by the Secretary of the Treasury and the Attorney General, which established the FLEWUG. The FLEWUG is responsible for the development of a nationwide wireless tactical network for use by

Federal, state, and local law enforcement officials and public safety entities. A National Law Enforcement/Public Safety Network Symposium, hosted by AFCEA International, in cooperation with GITS, is planned for FY'95.

- Worked closely with DoD and NCS representatives in the development of a GITS initiative to reevaluate security practices related to national security and to foster an industry/government partnership for improving services and security in public telecommunications.

- Continued expansion and implementation of the TREAS Consolidated Data Network (CDN), an encrypted, redundant data communications network, which is a significant enhancement to the Department's NS/EP capabilities. To enhance survivability of this critical network, the Executive Agent expanded the implementation of a circuit diversity plan that allows services to be provided by any vendor if the primary FTS2000 carrier does not have a completely diverse circuit route. The Executive Agent also is developing TSP restoration provisioning plans for the CDN. The departmentwide service includes the U.S. Customs Service; Internal Revenue Service; the Bureau of Alcohol, Tobacco, and Firearms; Financial Management Service; and departmental offices.

- Established a secure application gateway between the TREAS CDN and the Internet. This application provides access control, detailed auditing and accounting information, an information hiding capability that does not reveal information about the protected network to users on the public network and mail gateway services.

- Initiated an internetworking gateway from the TREAS CDN to the DOS network for packet switching applications.

- Planned actions to provide greater CDN capabilities are the implementation of a Transmission Control Protocol/Internet Protocol (TCP/IP) gateway to the DoD, the implementation of an E-Mail gateway/hub to further the connectivity of disparate E-Mail systems, the implementation of ISDN connectivity, and the implementation of connectivity to the Fredericksburg, Virginia, Telecommuting Center.

- Received bids in response to an RFP for the Treasury Communications System (TCS). The TCS, a successor contract to the CDN, will provide communication services between and among various TREAS, Government, and commercial locations in the United States, the U.S. Territories, and internationally. The TREAS CDN currently supports service to Alaska, Hawaii, Puerto Rico, Guam, the Virgin Islands, Bermuda, the Bahamas, and selected sites in Canada in addition to the CONUS. The TCS RFP requires vendors to provide improved management and billing capabilities over the CDN, and technology upgrades to prevent infrastructure obsolescence. These upgrades include improving connectivity and nationwide distribution; supporting physical circuits and wireless links; and offering the communications medium, many shared services, and common applications. The TCS is nearing completion of the evaluation process. The contract award is anticipated during FY95.

- Accomplished the implementation of diverse incoming access from FTS2000 Network B to the TREAS Digital Telecommunications System (DTS). This diversity, coupled with existing multiple outgoing access routes to the FTS2000 network, enhances TREAS telecommunications survivability. The DTS is an all-digital, advanced technology local switching system that provides services to main TREAS and bureau locations in the Washington metropolitan area.

- TREAS continued to support the OMNCS by staffing a position in the NCC with a full-time TREAS employee in accordance with NCS support requirements specified in E.O. 12472.

- Continued to support the TSP program through TREAS membership on the TSP Oversight Committee. This membership enables TREAS to be an active participant in developing service restoration policies that affect the financial and law enforcement communities, including TSP program enhancements in Federal, State, and local environments.

CURRENT/ONGOING NS/EP TELECOMMUNICATIONS ACTIVITIES

The continuing development of a departmentwide telecommunications strategy, the expansion of the CDN, the further definition and outreach of the FLEWUG, and the acquisition of the TCS are ongoing activities that will significantly enhance the Department's NS/EP posture. TREAS is a member of the TSP Oversight Committee and will continue to participate in the TSP program. TREAS continues to actively participate in the NCS Vision 21 planning process on the MFA II (Interoperability) team; supports the CRIS program through regular participation in the CRIS Working Group; and supported the planning and implementation of the GETS, including the development and resolution of the GETS billing system. TREAS supports the FTSC through the OTM, and the NCS SHARES Interoperability Working Group through the U.S. Customs Service and OTM.

TREAS's leadership in the activities of the GITS Working Group continues to position the department as a key stakeholder in all future NCS-NS/EP initiatives.

DEPARTMENT OF DEFENSE (DoD)

NS/EP TELECOMMUNICATIONS MISSION

Under the provisions of E.O. 12472, DoD is assigned the following NS/EP telecommunications responsibilities:

- Provide, operate, and maintain the telecommunications services and facilities to support the National Command Authorities, and execute the responsibilities assigned by E.O. 12333, United States Intelligence Activities, December 4, 1981
- Ensure that the Director, NSA, provides the technical support necessary to develop and maintain adequate plans for the security and protection of NS/EP telecommunications
- Execute the functions listed in Section 3(c) of E.O. 12472.

TELECOMMUNICATIONS STAFF ORGANIZATION

DoD includes the Office of the OSD, the military departments and the services within them, the unified and specified commands, and other agencies established to meet specific U.S. military requirements. The NSA is a separate Agency within DoD that protects U.S. communications, produces foreign intelligence information, and provides information security for DoD. DISA is a separate DoD Agency under the direction, authority, and control of the Assistant Secretary of Defense for C3I. DISA responds directly to the Chairman, Joint Chiefs of Staff (JCS), on operational matters and communications requirements associated with joint planning.

The principal staff positions concerned with NS/EP telecommunications in the OSD are the Under Secretary of Defense for Policy and the Assistant Secretary of Defense (ASD) for C3I. Command, Control, and Communications (C3) systems are the concern of a directorate of the Joint Staff (JS).

Ms. Deborah R. Castleman
Committee of Principals

Mr. J. Robert Anderson
Council of Representatives

SIGNIFICANT ACCOMPLISHMENTS

Defense Switched Network (DSN)

- Finished European central region network management capability with planned extension to Italy and the Benelux countries to be completed in FY95
- Implemented worldwide network configuration management processes
- Successfully tested the switched 56 kilobits per second (kbps) service in the European central region
- Deployed a network management center for Southwest Asia
- Reengineered the DSN to support the drawdown of U.S. forces in Europe.

Defense Message System (DMS)

- Replaced the Automatic Digital Network (AUTODIN) Switching Center (ASC) at Yokota Air Force Base (AFB), Japan, with a new suite of equipment and new software. This Government-owned ASC is now an exact replica of the eight leased ASC's in CONUS and Hawaii. This action ensures that the Pacific theater will have reliable Defense Communication System (DCS) record communications through fielding of the DMS.

- Decommissioned the ASC at Finnegayan, Guam. DISA's plan to close the Guam ASC was concurred with by the Navy and the U.S. Commander-in-Chief, Pacific (USCINCPAC), and approved by the JS. The closure was accomplished with minimal disruption of service to the users, who were rehomed to other Pacific-area ASC's. Capability to provide record communications support to satisfy the Warfighter's requirements in the Pacific theater were not impacted due to the improved throughput and reliability of the "new" ASC's at Yokota, Japan and Wahiawa, Hawaii.

- Renewed Inter-Service Support Agreement (ISSA) with the Army for AUTODIN Level II Management in the Western Hemisphere (WESTHEM). This agreement calls for the U.S. Army Information System Command's North East Telecommunications Switching Center in Syracuse, New York, to continue performing the DISA WESTHEM AUTODIN Control function. This arrangement has proven so effective that DISA-Pacific has approved a similar plan whereby the Navy-operated switching center at Wahiawa, Hawaii, will perform the Pacific-area AUTODIN control function in FY95.

- The *DMS-Government Open Systems Interconnection Profile (DMS-GOSIP)* RFP was released to industry on March 15, 1994. Proposals in response to the RFP were received by the U.S. Air Force Standard Systems Center on June 13, 1994. Evaluation of the proposals commenced on June 15, 1994, and is being performed by a joint service/agency team. This activity remains on schedule for achieving the contract award milestone of December 16, 1994.

- The *DMS Program Plan* (POM 96) was forwarded to the services and agencies on June 10, 1994, for use in preparing DMS funding profiles for POM 96 submission. Additionally, the JS endorsement of the POM 96 was signed on July 19, 1994. The POM 96 was developed with full cooperation and coordination of the services and agencies, and is guiding POM 96 programming actions.

- Allied Communications Publication (ACP) 123, *Common Messaging Strategy and Procedures*, was ratified by the Principals of the Combined Communications Electronics Board (CCEB) in June 1994. These Principals represent the respective defense ministries/departments of the United States, Australia, Canada, New Zealand, and the United Kingdom. This document will be effective January 1, 1995, for the CCEB member nations, and is expected to be adopted by NATO, as well as numerous other nations. ACP 123 serves as implementation guidance for organizational allied message interoperability, and includes the protocol, profiles, policy, and procedures for the use of the CCITT X.400 recommendations for message handling systems across national military boundaries.

- The Proof of Concept (POC) experimental network environment achieved a major milestone in March 1994, when Message Transfer Agents at Gunter AFB, Alabama; Fort Detrick, Maryland; and Fort Huachuca, Arizona, successfully exchanged X.400 (DMS/P772) messages. Additional user locations have been integrated with the POC and several demonstrations of the prototype capabilities were provided to DoD and non-DoD personnel.

- *DMS Transition Plan Guidance* was drafted and coordinated with Office of the Assistant Secretary of Defense (OASD) and the services and agencies, and released on June 30, 1994. The DMS Program Management Office (PMO) also released a timetable reflecting future submission dates for service and agency transition plans.

- Coordinated and assisted the Air Force Message Distribution Terminal (MDT) Program Manager with the testing and fielding of MDT software version 4.3.7. This software was released to the services and agencies in August 1994 and will facilitate the transition to the DMS target architecture.

- The *DMS Component Approval Process* (CAP), dated March 24, 1994, was streamlined to allow the services and agencies to take advantage of the provisions of the accelerated CAP. This action was coordinated with the services and agencies, and the change to the CAP was issued in August 1994.

- Provided informational briefs to non-DoD agencies such as the Red Cross, FAA, DOJ, CIA, DOS, and the Foreign Broadcast Information Service to advise them of the DMS and open dialogue with them to facilitate their migration to the DMS target architecture.

Defense Satellite Communications System (DSCS)

- Continued to sustain the space segment super high frequency (SHF) capability through the timely launch of one DSCS III satellite to replace aging elements of the DSCS constellation. For the first time in the history of the program, the DSCS primary constellation is populated with DSCS satellites.

- Continued planning and implementation of the Integrated Digital Network Exchange (IDNX) as the standard smart multiplex that will allow integration of the DSCS with terrestrial communication networks.

- Continued to develop the implementation of a Standard Tactical Entry Point System for tactical SHF users including Navy ship-to-shore communications.

Jam Resistant Secure Communications (JRSC)

- Continued the implementation for the Distributed MILSATCOM Conferencing Project to serve the Secure Survivable Communications Network with voice and data coordination circuits between missile warning sensors and correlation centers.

- Continued the satellite earth terminal upgrade to incorporate fiber optics for high-altitude electromagnetic pulse improvements.

- Developed a "snapback" plan that will allow rapid return to the stressed mode for satellites that have been linearized in Channel One.

Defense Information System Network (DISN)

- With the capitalization of the DISN Tier I networks and the Scott AFB and Columbus, Ohio, network management centers on October 1, 1993, efforts in support of the WESTHEM DCS were focused on completing the Streamlining of Information Service Operations Consolidation Study integration into the baseline Air Force network. Also begun was the integration of the Navy Network and the Defense Logistics Agency Corporate Network into the IDNX-based DISN. The Marine Corps Data Network was fully incorporated and is being managed from the Columbus, Ohio, Level II Network Management Center.

- Supported the DoD Megacenter migration program. This supports the Megacenter

consolidation through the migration of 64 legacy sites to 16 Megacenters over a 2-year period.

- Initiated Project 5000 to accelerate circuit migration onto DISN. More than 856 circuits were migrated from December 1993 to July 1994. A balance between circuit migration and unnecessary duplication and redundancy was also sought through network optimization. Topology optimization and cutover planning reduced the number of new IDNX sites required.

- Developed tariff rate reduction plans to implement an affordable T3 network. Changes to FCC regulations, plus several newly identified potential subscribers placed greater emphasis on establishing the network under the auspices of DISN. Existing DISN sites were selected to form the core locations to model the T3 network for point of presence and as a baseline for a cost analysis.

- In support of Europe, the implementation of the DCS Spain-Italy Reconfiguration (DSIR) continued with the activation of additional IDNX transmission links. DSIR provides digital bulk-encrypted transmission service via leases, U.S. Government-owned terrestrial links, and DSCS links between major DCS facilities. The European IDNX network and the CONUS DISN network were interconnected in July 1994. The DCS Mediterranean Improvement Program (DMIP) was completed in January 1992 with the activation of commercial leased communications within and outside of Turkey. The deactivation of all the DCS facilities in Greece has left only seven Turkey DCS transmission facilities remaining in DMIP. Steps to change Turkey's out-of-country connectivity from leased terrestrial transmission to commercial satellite communications have been held in abeyance by the Turkish General Staff. Currently, host nation approval is being sought for the changes to the DCS in Turkey. About 100 links of the Digital European Backbone (DEB) are now operational, but scheduled base closures are reducing their numbers each month. There are presently 13 DEB I links, all within Italy, pending an upgrade to the standard DEB II configuration used throughout the remainder of Europe. This upgrade should be completed by December 1995, and will provide a capability that will reduce the amount of leased service required and improve trans-Alpine connectivity between Germany and Italy. In FY95, the trans-Atlantic T1 between the Pentagon and Frankfurt will be rehomed to Rhein Main due to base closures.

- In the Pacific, the Hawaii Area Wideband System (HAWS) upgrade will provide dedicated Command and Control (C2) connectivity between DoD users on Oahu, Hawaii. The former HAWS contract has expired and can not be renewed. The HAWS Upgrade will consist of T1/T3 leases interconnecting IDNX multiplexers. The first T3 between the North Shore and Kunia, Hawaii, was activated in March 1994. The Pacific Consolidated Telecommunications Network is a robust, long-haul communications network that offers digital communications through the IDNX. Efforts have been initiated to establish a DCS network in Alaska in FY95 with anticipated savings in excess of $10 million annually.

- One SOUTHCOM T1 was activated in September 1994, and a contract for three T1's for MacDill AFB, Florida, into Puerto Rico was extended for 1 year through 1995. The T1 between Norfolk, Virginia, and Bermuda was also extended through FY95 with Naval Air Station Bermuda closing down in September 1995.

- DCS HF long-haul point-to-point links are being reviewed to eliminate those that are no longer required. The DISA HF programs will require restructuring based on *Joint Staff Mission Area Review* (MAR) recommendations, base closure actions, and service drawdowns.

- The Secret Internet Protocol Router Network (SIPRNet) was implemented in the CONUS in FY94. The completion of the Defense Service Network 1 (DSNET 1) secret network transition to the worldwide SIPRNet will be completed by the second quarter FY95. The remaining Defense Data Networks will be transitioned to the DISN by October 1995.

- Early in 1994, a Request for Information (RFI) to industry was developed to gather information necessary to redefine security requirements for the DISN and to review the certification and accreditation procedures. In April, ASD C3I and the GSA Administrator agreed to consolidate the GSA Post Federal Telephone System 2000 (PF2K) and the DISN acquisition where practical. Pursuant to this agreement, the security RFI was briefed to the PF2K Inter-Agency Management Council Acquisition Working Group (IMC/AWG) for possible expansion to include all Federal agencies. The IMC/AWG embraced the concept. DoD and GSA personnel revised the RFI to make it applicable for support of the PF2K/DISN acquisition. The RFI was released by GSA in late June 1994, with 20 responses received and analyzed by the interagency team. The results of that analysis are shaping the definition of the security specification used in the RFP for PF2K Governmentwide services.

Defense Red Switch

- The red switches at U.S. European Command, U.S. Transportation Command, and Air Mobility Command were accredited to process tandem Top Secret/Special Compartmented Information.

- Five initial training courses for Defense Red Switch maintenance personnel were conducted at the red switch test bed at Ft. Huachuca, Arizona. In addition, three weeks of on-site training was provided at all sites where enhanced Remote Switching Unit-type switches were installed.

- Electrospace Systems Inc. software versions 10.39.04 and 10.40.01 were Beta tested and successfully loaded in the Defense Red Switch Network. Software version 10.39.04 resolved security anomalies and equipment interface problems. Version 10.40.01 provides variable security access levels on interswitch trunks and is the baseline software for the Defense Red Switch Network.

- Red switches were installed at U.S. European Command, U.S. Pacific Command, and U.S. Atlantic Command. In addition, red telephone service was extended to Commander-in-Chief, U.S. Forces Korea and Commander-in-Chief, U.S. Naval Forces Europe.

- Successfully transitioned the Joint Staff Worldwide Secure Voice Conferencing System to the Defense Red Switch Network.

DEPARTMENT OF JUSTICE (DOJ)

NS/EP TELECOMMUNICATIONS MISSION

The NS/EP telecommunications mission for DOJ is to provide telecommunications facilities and services in support of DOJ NS/EP essential functions. The NS/EP responsibility is centralized in the Justice Management Division for all Department entities except the Federal Bureau of Investigation (FBI) and the Drug Enforcement Administration (DEA). These bureaus maintain separate secure network facilities.

TELECOMMUNICATIONS STAFF ORGANIZATION

The Telecommunications Services Staff (TSS) under the Deputy Assistant Attorney General for IRM operates and manages DOJ's message processing system and the Telecommunications Service Center. TSS also provides networking and technical assistance to DOJ's offices, boards, and divisions. Secure message transmission is offered through separate facilities.

The Information Security Policy Group (ISPG), Security and Emergency Planning Staff is responsible for security oversight of all national security communications systems within the Department. The ISPG also administers the Secure Telephone Unit III (STU-III) program for the Department. The DEA and FBI administer their own STU-III programs.

SIGNIFICANT ACCOMPLISHMENTS

DOJ realized the following NS/EP telecommunications achievements:

- Provided one full-time DOJ employee to meet the staffing support requirement for the OMNCS, as required by E.O. 12472.

MR. ROGER M. COOPER
Committee of Principals

MR. DONALD E. JOSEPHS
Council of Representatives

- The DOJ participated in the NCS Vision 21 process. This process includes MFA's. A senior staff member serves on the MFA I Team (Processes/Services), which developed the revised *NCS NS/EP Telecommunications Planning Process*.

- DOJ chaired NCS Vision 21 MFA VI (NII). MFA VI was established to monitor, participate, and ensure that NS/EP issues are considered in the administration's NII initiative. A senior staff member continues to serve on the MFA VI Team.

- TSS provided operational telecommunications services by managing, engineering, and operating the DOJ nationwide data telecommunications systems serving all DOJ offices except the FBI.

- The Department and its bureaus (DEA, FBI, and the Immigration and Naturalization Service [INS]) continue their participation in SHARES Program radio exercises. Each SHARES exercise offers participating Federal departments and agencies the opportunity to develop and improve operator skills for passing

NS/EP traffic. A mix of departmental HF radio stations, with and without prior SHARES experience, participated in the exercises.

CURRENT/ONGOING NS/EP TELECOMMUNICATIONS ACTIVITIES

The following current/ongoing activities support NS/EP objectives:

- DOJ continued its active participation in the NCS activities of the COP/COR, attended the President's NSTAC meeting, and its IES meetings.

- DOJ continues its vigorous support of the GETS Program, the FTSC Standards Program, the TSP System Program, the SHARES HF Radio Program, the CRIS Initiative, and the Communications Interoperability Working Group.

- DOJ continues its active support of the FTSC's HF Radio Subcommittee, Fiber Optics Subcommittee, and the LMR Subcommittee, and their associated working groups.

- DOJ continues its participation in the White House Communications Interoperability Working Group, which is chartered to conduct studies and make recommendations concerning the interoperability of telecommunications between the White House Communications Agency (WHCA) and other agencies and organizations in the Federal Government.

PENDING ISSUES

- Monitor GETS billing activities for impact on the Department.

DEPARTMENT OF THE INTERIOR (DOI)

NS/EP TELECOMMUNICATIONS MISSION

Few telecommunications assets are identified in support of NS/EP objectives because the Department's primary mission is to efficiently manage natural resources. Radio equipment from the National Interagency Fire Center is available for emergency support and is jointly managed in association with the U.S. Department of Agriculture. Telecommunications assets are frequently deployed in support of multiagency disaster relief efforts nationally and internationally.

TELECOMMUNICATIONS STAFF ORGANIZATION

Telecommunications program management resides at both the departmental and bureau levels. The Telecommunications Systems Division, Office of Information Resources Management, has departmentwide responsibilities. Bureau telecommunications managers and their staff are responsible for telecommunications operations. The Telecommunications Systems Division coordinates the sharing and acquisition of telecommunications facilities, equipment, and services; prepares departmental policy and strategic telecommunications plans; approves system procurement and installation actions; obtains radio frequency authorizations; serves as liaison with GSA, NTIA, and the NCS; provides technical assistance to bureaus and offices; and either reviews or develops specifications and solicitation documents for obtaining the services or facilities required by bureaus and offices.

SIGNIFICANT ACCOMPLISHMENTS

The Department implemented a nationwide communications network (DOINET) in FY94 that is used to support Departmentwide administrative and bureau programmatic requirements. The network architecture is based on cell switching technology that consists of redundant components and circuitry to ensure that reliable services are available. DOINET is an integrated network that supports voice, video, and data applications. It takes full advantage of the FTS2000 contract by aggregating services and eliminating duplicate networks.

An implementation strategy for reduction of costs associated with the NTIA mandate to narrowband very high frequency (VHF) radio networks was initiated. Bureaus are now in a position to program and coordinate intra- and interbureau approaches leading to innovative, shared, and cost-effective land mobile radio networks.

MR. JAMES P. JADLOS
Committee of Principals

MR. JAMES E. DOLEZAL
Council of Representatives

CURRENT/ONGOING NS/EP TELECOMMUNICATIONS ACTIVITIES

Departmental reliance and emphasis on information resources continue to grow. The development of new functional applications, enhancements of existing systems, and the redesign and replacement of obsolete systems all reflect this growth. Despite necessary budget and

personnel constraints, technology advances and intradepartmental sharing will continue to be exploited to further increase productivity. Expansion of DOINET services and the use of digital telephone systems, local area networks, and land mobile communications are critical to departmental operations. Wireless communications service developments are being closely monitored for future application within the Department.

To comply with the *Omnibus Budget Reconciliation Act of 1993,* many Federal Government microwave operations currently in the 1710 to 1755 megahertz (MHz) band must be shifted within the next 10 years to commercial service providers or moved to other microwave bands. DOI estimates it will cost between $8 million and $14 million to replace these essential services using commercial circuits and to reengineer/install equipment in alternative microwave bands.

The Department actively supported implementation of the GETS program in 1994. Key officials and bureau emergency coordinators have been identified to receive GETS access cards. User policies and instructions will be promulgated with the distribution of the GETS PIN cards.

PENDING ISSUES

Federal agencies have been mandated by the NTIA to transition all 2-way mobile VHF-FM radio networks to narrowband (12.5 kilohertz [kHz]) channels by the year 2005. The Department estimates the spectrum conserving initiative will cost over $250 million. Implementation may be hampered by funding constraints, shortage of experienced technical staff, interoperability problems, and a lack of industry or government standards for narrowband digital radio equipment.

UNITED STATES DEPARTMENT OF AGRICULTURE (USDA)

NS/EP TELECOMMUNICATIONS MISSION

The USDA has several essential functions requiring NS/EP telecommunications.

- Provide the domestic distribution of seed, livestock, poultry feed, fertilizer, and farm equipment
- Manage the use of lands and facilities under USDA jurisdiction
- Direct the rural fire control activities regarding national forests in coordination with local authorities
- Inspect livestock and poultry, and the products thereof, to ensure safety and wholesomeness
- Implement plans using water in food production and processing.

TELECOMMUNICATIONS STAFF ORGANIZATION

Although there is no formal organization within the USDA dedicated to NS/EP telecommunications support, policy and expertise on NCS matters are provided by the Office of IRM as required and as a collateral duty.

Telecommunications management resides at the Department and agency level. The Telecommunications Policy Division has departmentwide responsibilities that include representing departmental interests in governmentwide activities, such as acting as a liaison to the GSA and NCS.

The Telecommunications Policy Division is responsible for providing departmental telecommunications policy and guidance; supporting USDA and governmentwide telecommunications programs; developing and maintaining departmental long-range telecommunications plans; implementing telecommunications standards and security programs; conducting agency reviews; and evaluating the implementation of telecommunications policies, standards, and long-range plans.

Mr. John L. Okay
Committee of Principals

Mr. Robert D. Johnson
Council of Representatives

SIGNIFICANT ACCOMPLISHMENTS

USDA realized the following NS/EP telecommunications accomplishments:

- Reviewed and updated the USDA Office of Emergency Programs and the Office of IRM policy guidance from the telecommunications perspective.
- Reviewed a departmentwide NS/EP telecommunications survey supporting essential emergency functions (EEF).
- Reviewed and streamlined the staffing coordination process by developing procedures for improved responsiveness to the needs of the Manager, NCS.

- Identified new requirements for the STU-III. Participated with NSA in a communications security review.

CURRENT/ONGOING NS/EP TELECOMMUNICATIONS ACTIVITIES

- Participate in COP/COR, the President's NSTAC, IES, and its Ad Hoc Issues Group
- Represent USDA as an NCS member organization in Manager, NCS, activities
- Participate in the SHARES HF Radio Program, CRIS Initiative, the Meteor Burst Communications (MBC) Standards Working Group, and FWUF
- Support the Diplomatic Telecommunications Service
- Participate in the NCS NS/EP Telecommunications Planning Process Working Group, Interoperability Radio Working Group, the FTSC, and other working group activities as necessary
- Process new requirements for STU-III's
- Evaluate implementation of GETS telecommunications policies and identify GETS requirements for the LEC
- Participate in the NCS Vision 21/TQM process to assist the administration in the NII initiative, ensure that the Federal Government has the telecommunications services needed during emergencies, and represent USDA on the NII RVWG.

PENDING ISSUES

- Monitor long-term approved methodology for funding by which the Manager, NCS, telecommunications initiatives are to be funded and implemented (i.e., GETS usage billing, funding of the NLP)
- Participate in evaluating and implementing the TSP System, which replaced the restoration priority system, and related NS/EP initiatives
- Review USDA telecommunications resources and staffing constraints with expanded NCS activity and workload
- Monitor the OMNCS functional realignment, NII Task Force initiatives, and implementation of the GETS program for its impact on USDA
- Monitor STU-III communications security (COMSEC), USDA requirements to implement the NLP and Executive, Judicial, Regulatory, and Legislative developments (e.g., Radio/ Spectrum Reallocation Plan, North American Numbering Plan).

DEPARTMENT OF COMMERCE (DOC)

NS/EP TELECOMMUNICATIONS MISSION

The Department of Commerce is the chief Federal Government organization responsible for the commercialization of trade, and its related impact on commodities, invention, and technology. DOC maintains a strong position in the analysis of economic trends through census, business, and standards information. The DOC role in technology also involves gathering, monitoring, and analyzing environmental data to report weather, oceanic, and other geophysical information that is considered sufficiently critical to require early warning of expected emergencies. The Department, therefore, prevents the loss of American lives and damage to property.

The above functions are the DOC key responsibilities and involve several organizational missions that are ongoing during national emergencies. These functions are supported by the NCS NLP as well as agency-level mission programs supported by NS/EP telecommunications services and are performed during the three identified NS/EP stress periods — peacetime, crisis and mobilization, and late trans-attack and early post-attack (LTA/EPA).

The DOC key responsibilities performed during national security emergencies require the implementation of plans during peacetime and activation of planned controls during the crisis/mobilization and LTA/EPA periods. E.O. 12656 establishes the Department's emergency preparedness functions identified below in items 1 through 13, while E.O. 12472 specifies two additional roles described in items 14 and 15.

(1) Develop control systems for priorities, allocation, production, and distribution of materials and other resources that will be available to support both national defense and essential civilian programs in a national security emergency. Control the production and distribution of all manufactured goods and processed materials.

Agency-Related Activities: International Trade Administration (ITA), Bureau of Export Administration (BXA), and Economic and Statistics Administration (ESA) programs

(2) Identify those industrial products and facilities that are essential to mobilization readiness, national defense, or post-attack survival and recovery, in cooperation with the DoD and other departments and agencies. Control the use of all production facilities except those of DoD and the Department of Energy (DOE).

Agency-Related Activities: ITA, BXA, and ESA programs

(3) Analyze potential effects of national security emergencies on actual production capability, taking into account the entire production complex, including shortages of resources,

MR. THOMAS W. ZETTY
Committee of Principals

MR. JEROME T. GIBBON
Council of Representatives

and develop preparedness measures to strengthen capabilities for production increases in national security emergencies in cooperation with the DoD and other departments and agencies. Control all construction materials and the furnishing of basic industrial services (except those under the jurisdiction of DOE, USDA, NCS, FCC, DHHS, DoD, FAA, Department of Transportation [DOT], and DOI).

Agency-Related Activities: ITA, BXA, and ESA programs

(4) Perform industry analyses to assess capabilities of the commercial industrial base to support the national defense, and develop policy alternatives to improve the international competitiveness of specific domestic industries and their ability to meet defense program needs in cooperation with DoD. In addition, DOC implements the Machine Tool Order Program to meet defense requirements.

Agency-Related Activities: ITA, BXA, and ESA programs

(5) Develop plans for providing emergency assistance to the private sector through either direct or participation loans for the financing of production facilities and equipment in cooperation with the TREAS. Implement emergency assistance programs essential to small businesses in coordination with the Small Business Administration.

Agency-Related Activities: ITA, BXA, and ESA programs

(6) Prepare plans to regulate and control exports and imports in national security emergencies in cooperation with DOS, DoD, DOT, and TREAS. Regulate and control exports and imports.

Agency-Related Activities: ITA and BXA programs

(7) Provide for the collection and reporting of census information on human and economic resources, and maintain a capability to conduct emergency surveys to provide information on the status of these resources as required for national security purposes. Implement emergency plans regarding census functions, and coordinate services essential to Federal agencies regarding census data.

Agency-Related Activities: Census Bureau programs

(8) Provide overall plans and programs to ensure that the fishing industry continues to produce and process essential protein in national security emergencies. Control fishing industry activities for protein production.

Agency-Related Activities: National Oceanic and Atmospheric Administration (NOAA)/National Marine Fisheries Service (NMFS) programs

(9) Develop plans to provide meteorological, hydrologic, marine weather, geodetic, hydrographic, climatic, seismic, and oceanographic data and services to Federal, State, and local agencies, as appropriate. Coordinate scientific and technological services essential to Federal departments and agencies, particularly meteorological and related services, map and related data production for non-DoD purposes, standards activities, and census data. Perform functions that may involve monitoring potential radiological hazards, including weather forecasting, geodetic, hydrographic, climatic, seismic, and oceanographic data.

Activities: Technology Administration (TA), NIST; ESA; NOAA, National Weather Service (NWS) programs

(10) Represent the United States in industry-related international (NATO and allied) civil emergency preparedness planning and related activities in coordination with DOS and the FEMA.

Agency-Related Activities: ITA and BXA programs

(11) Assist DoD in formulating and carrying out plans for stockpiling strategic and critical materials.

Agency-Related Activities: ITA, ESA, and BXA programs

(12) Support USDA in planning for the national security management, production, and processing of forest and fishery products.

Agency-Related Activities: ITA, BXA, and NOAA/NMFS programs

(13) Assist TREAS in the formulation and execution of economic measures affecting other nations in consultation with DOS and DoD.

Agency-Related Activities: ITA and ESA programs

(14) Develop plans and procedures concerning radio spectrum assignments, priorities, and allocations for use by Federal departments, agencies, and entities in national security emergencies. Manage the Federal Government's share of radio spectrum.

Agency-Related Activities: NTIA programs

(15) Develop, maintain, and publish policy, plans, and procedures for the control and allocation of frequency assignments, including the authority to amend, modify, or revoke such assignments in those parts of the electromagnetic spectrum assigned to the Federal Government in national security emergencies. Control the allocations of frequency assignments.

Agency-Related Activities: NTIA programs

TELECOMMUNICATIONS STAFF ORGANIZATION

The principal Commerce organizations performing the above functions that rely on NS/EP telecommunications support are NTIA; NIST as part of TA, ESA, BXA, ITA; the Census Bureau as part of Economic Affairs (EA); the Patents and Trademarks Office (PTO); and NOAA, which includes the NWS, the Office of Oceanic and Atmospheric Research (OAR), the National Environmental Satellite Data and Information Service (NESDIS), the National Oceanic Service (NOS), and the NMFS. (See Exhibit 4-1.)

SIGNIFICANT ACCOMPLISHMENTS

The DOC organizations continue to make significant strides in achieving support for the previously listed emergency preparedness functions by providing communication resources vital to the flow of mission-related information. These accomplishments are listed below.

- As the Federal agency delegated responsibility for spectrum management in all conditions of crisis and emergency (E.O. 12472, April 3, 1984), NTIA drafted a revised emergency readiness plan (ERP) for Federal emergency use of the radio spectrum. The plan encompasses emergency categories of spectrum use based on the TSP System for NS/EP. It addresses policies and procedures for Federal radio spectrum use and management in wartime or national security emergencies as well as in other emergencies not included in the formal definitions of these terms.

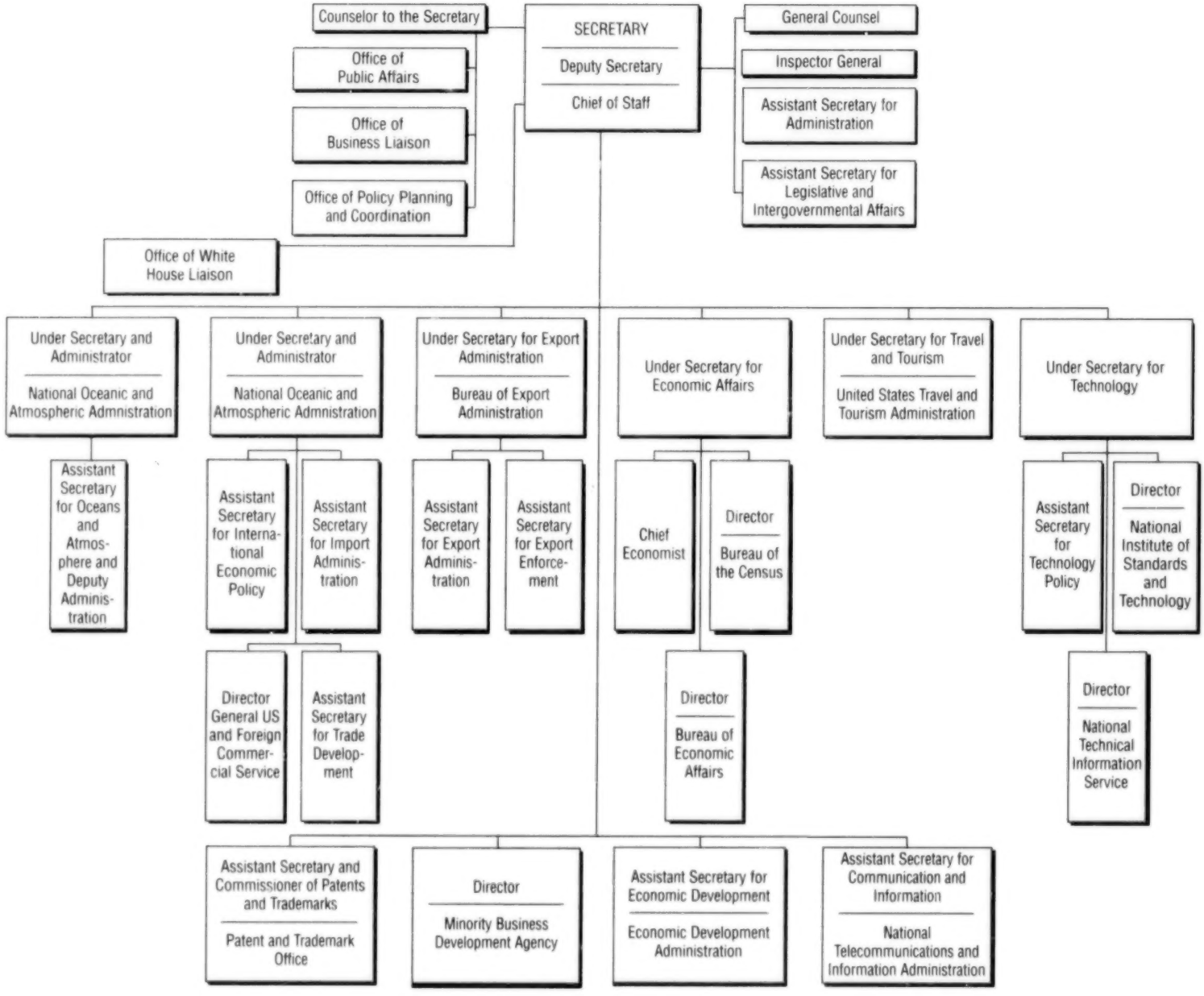
- NTIA initiated a cooperative effort to develop the Automated Federal Spectrum Management System (AFSMS) Initial Operating Capability (IOC) and other standard frequency management software tools used to plan,

coordinate, and control Federal use of the radio frequency electromagnetic spectrum. The AFSMS IOC is slated to be fielded early in 1995 for testing, evaluation, and use by national-level spectrum managers of all Federal agencies.

- NIST expanded its capability with basic and advanced telecommunications services ranging from voice to video in support of its mission programs and the use of national networks.

EXHIBIT 4-1

Department of Commerce Organizational Chart


Counselor to the Secretary
Office of Public Affairs
Office of Business Liaison
Office of Policy Planning and Coordination
SECRETARY
Deputy Secretary
Chief of Staff
General Counsel
Inspector General
Assistant Secretary for Administration
Assistant Secretary for Legislative and Intergovernmental Affairs
Office of White House Liaison
Under Secretary and Administrator
National Oceanic and Atmospheric Admnistration
Assistant Secretary for Oceans and Atmosphere and Deputy Administration
Under Secretary and Administrator
National Oceanic and Atmospheric Admnistration
Assistant Secretary for International Economic Policy
Assistant Secretary for Import Administration
Director General US and Foreign Commercial Service
Assistant Secretary for Trade Development
Under Secretary for Export Administration
Bureau of Export Administration
Assistant Secretary for Export Administration
Assistant Secretary for Export Enforcement
Under Secretary for Economic Affairs
Chief Economist
Director
Bureau of the Census
Director
Bureau of Economic Affairs
Under Secretary for Travel and Tourism
United States Travel and Tourism Administration
Under Secretary for Technology
Assistant Secretary for Technology Policy
Director
National Institute of Standards and Technology
Director
National Technical Information Service
Assistant Secretary and Commissioner of Patents and Trademarks
Patent and Trademark Office
Director
Minority Business Development Agency
Assistant Secretary for Economic Development
Economic Development Administration
Assistant Secretary for Communication and Information
National Telecommunications and Information Administration

- ITA continued to upgrade and add links to the DOS Diplomatic Telecommunications System network as well as commercial networks for processing domestic and foreign commercial information for international trade.

- ITA implemented modern, standards-compliant networks to satisfy organizational requirements for a total information processing environment.

- The ESA/Census Bureau completed the T1 upgrade to its gateway to the Department's wide area network (WAN) for completing its access to nationwide operating facilities.

- The ESA/Census Bureau completed its upgrade to full T1 service for its nationwide telecommunications network to accommodate file transfers using an open system architecture.

- The ESA/BEA expanded its LAN environment to satisfy growing demands and provide new capabilities on the network for batch processing and fax service. The features include access to Internet, X.400 service via FTS2000, and the Department X.25 DOCnet.

- The NOAA completed the upgrade of the high-speed switch services for the transfer of information between major data centers. The capability includes services for the NII, and gateways to Internet for support of electronic commerce.

- The NOAA/NMFS completed implementation of the FISHnet services over the FTS2000 to support connectivity between four National Marine Fisheries Service computing centers, and regional field locations. Gateways were also included to allow communications with Department locations.

- The NOAA/NESDIS upgraded its telecommunications networks to transfer search and rescue satellite (SARSAT) data information to assist programs worldwide for the exchange of emergency alert responses. The U.S. is the leading country in the Western Hemisphere for search and rescue information systems.

- The DOC headquarters expanded its automated telecommunications management system capability to enhance the management of all Commerce voice and data communications systems as well as associated vendor-provided electronic data.

- DOC headquarters expanded the Commerce X.25 data network DOCnet capability and management platform to improve the transfer and interconnectivity of information among the Commerce field offices and data centers. The network control center (NCC) was upgraded to enhance the monitoring and trouble reporting capabilities.

- DOC completed the conversion of two additional facilities in the Washington metropolitan area to the new enhanced digital switching system to provide enhanced voice and data communications services.

CURRENT/ONGOING NS/EP TELECOMMUNICATIONS ACTIVITIES

DOC operating units are continuing to upgrade and expand several departmentwide telecommunications services for the transfer of essential information to support their missions/functions.

- NIST is implementing major communications facilities including intersite T1 links between its locations in Gaithersburg, Maryland, and Boulder, Colorado, and its new Center for Advanced Research in Biotechnology in Maryland; a backbone fiber optic network at both sites; and T1 access to outside data networks (e.g., Internet).

- ITA is moving its communications services to the expanded capabilities of the new DOS open network X.25 packet switching environment to support international communications.

- ITA is adopting a total networked compatibility program to provide an integrated technology infrastructure using communications gateways to access network servers for processing national information resources.

- The ESA/Census Bureau is expanding the use of automated information collection platforms using computer-assisted technology to enhance the information collection and delivery process. The CASIC and CATI platforms will allow information to be directly connected to national networks for delivery to regional and central processing facilities.

- ESA/BEA is planning to upgrade its networking to Novell 4.0, and X.500 directory type service to satisfy program demands using the POSIX standards.

- NOAA/NWS is continuing to upgrade its telecommunications facilities that support the collection and distribution of weather data among field weather observation offices, which are tasked to rapidly disseminate public warnings and forecasts.

- NOAA/NWS is continuing to implement new satellite services to disseminate warnings, forecasts, and data to international countries for use in transportation.

- NOAA/NWS is implementing its capability to transfer, via digital facsimile using satellite communication services, aeronautical weather maps to airports and pilots.

- NOAA/NWS is reviewing its plans for the design of an upgraded telecommunications capability to enhance advanced weather interactive processing systems.

- NOAA/NESDIS is continuing the implementation of an upgraded telecommunications network to support the transfer of terrestrial- and atmospheric-collected environmental data throughout the North American continent.

- NOAA/NESDIS is continuing to implement an international communications capability to allow the gathering and processing of weather observation data from internationally available satellites.

- NOAA/NOS is continuing to implement a capability to create and disseminate digital aeronautical data in an entirely electronic format.

- NOAA/NOS is continuing to implement its shipboard communications services with more reliable ship-to-shore satellite telecommunications services.

- NOAA/NWS is continuing to enhance its use of Doppler radar as an effective weather information gatherer under the wind profiler program, and is implementing a communications platform to improve weather information collection and monitoring.

- DOC is continuing to upgrade communications services to accommodate better voice and data communications services using the aggregated switch services program and electronic key systems.

- DOC offices are continuing to upgrade users' E-Mail access to the Internet and FTS2000; more gateways were implemented for expanded access within the Department.

DOC participates in the NCS TSP program to provision and restore communications services used throughout the Department. In addition, DOC has initiated efforts for use of the new NCS GETS program to provide call priority routing access to Department users during emergencies.

DOC relies on the use of governmentwide communications services, where possible, to support the communication of information during peacetime and emergencies. In most cases, DOC facilities have shifted to GSA-provided FTS2000 services for long distance voice communications and to the GSA local services program for intracity voice communications. The trend over the last 5 years is to shift toward aggregated voice-grade communication services and dependence on service providers for emergency periods.

The DOC dependence on data communication services has also moved toward GSA-FTS2000 provided data network services. However, the move of data services has generally been completed; only new services will increase service use.

There is a growing DOC trend toward the use of information service gateway connections with Internet to satisfy information system connections to industry and research/education organizations. DOC scientific missions, such as satellite and earth sensing technology, will most likely remain as independently provided communications networks if not serviced by FTS2000 or Internet.

DEPARTMENT OF HEALTH AND HUMAN SERVICES (DHHS)

NS/EP TELECOMMUNICATIONS MISSION

DHHS has several essential functions requiring NS/EP telecommunications:

- Mobilize the health industry and health resources in national security emergencies
- Promote State and local programs for the provision of health, mental health, and medical services in national security emergencies
- Allocate health, mental health, and medical service resources among civilian and military claimants
- Reduce or eliminate adverse health and mental health effects produced by hazardous agents (biological, chemical, and radiological)
- Assist State and local governments in rehabilitating persons injured or disabled during national security emergencies.

TELECOMMUNICATIONS STAFF ORGANIZATION

Telecommunications program management resides at both the departmental and operating division function. The Office of IRM (OIRM) in the Office of Management and Budget has overall responsibility for telecommunications policy and management. The DHHS operation divisions are responsible for the acquisition and operation of telecommunications services and facilities to satisfy their programs' mission requirements. Also, there is an NS/EP telecommunications planning and operation function in the Office of Emergency Preparedness/ NDMS within the Office of the Assistant Secretary for Health.

DR. NEIL J. STILLMAN
Committee of Principals

MR. FRANK J. CAMPBELL
Council of Representatives

SIGNIFICANT ACCOMPLISHMENTS

DHHS realized the following NS/EP telecommunications achievements:

- Provided staffing support to the OMNCS with a full-time employee to meet its NCS support requirements specified in E.O. 12472
- Participated in SHARES Program radio exercises
- Participated in the Vision 21/TQM process
- Participated in the OMNCS/NIST.

CURRENT/ONGOING NS/EP TELECOMMUNICATIONS ACTIVITIES

- Participate in COP/COR, the NSTAC, and its IES
- Participate in developing the CRIS initiative

- Participate in developing interagency interoperability for computers and communications
- Represent DHHS as an NCS member organization in Manager, NCS, activities
- Develop a DHHS TSP policy and procedures circular.

PENDING ISSUES

The OMNCS is assisting the Office of NDMS with its communications system that supports NDMS elements, Medical Support Unit, and Disaster Medical Assistance Teams and has recommended methods for the system's modernization and enhancement. The Office of Emergency Preparedness and OIRM are reviewing the proposed architecture.

DEPARTMENT OF TRANSPORTATION (DOT)

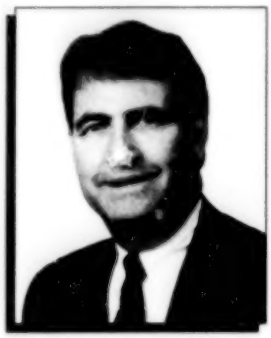
NS/EP TELECOMMUNICATIONS MISSION

DOT has a wide range of missions including the safety of travelers in transit at sea, in the air, and on the ground. Communications support varies from administrative to command and control, using methods that range from the PSN to advanced dedicated systems. DOT incorporates NS/EP considerations into its telecommunications planning, management, and operational programs.

TELECOMMUNICATIONS STAFF ORGANIZATION

The DOT telecommunications program is administered by the OIRM, Office of the Secretary of Transportation. The director of this office serves as the DOT representative to the NCS COP. NS/EP telecommunications policy and planning are managed by a senior staff member of the IRM Policy and Planning Division who also serves as the DOT representative to the NCS COR. DOT is a participant in a number of NCS activities at the working level. In addition, DOT plays an active role in the TSP Oversight Committee, SHARES Interoperability Working Group, and the NCS Vision 21 process. DOT telecommunications staff members in the field often take part in NCS-sponsored exercises to maintain proficiency and evaluate program efforts. Most important, DOT telecommunications field components demonstrate their ability to provide communications in support of actual NS/EP-related missions.

The Department's operating administrations provide systems and networks to support their mission needs. The efforts of the U.S. Coast Guard (USCG), FAA, Federal Highway Administration (FHWA), and the Maritime Administration (MARAD) are included in DOT's input to the *FY94 NCS Annual Report.*



Mr. Eugene K. Taylor, Jr.
Committee of Principals

Ms. Nancy H. Correia
Council of Representatives

SIGNIFICANT ACCOMPLISHMENTS AND CURRENT/ONGOING NS/EP TELECOMMUNICATIONS ACTIVITIES

DOT has a number of significant accomplishments to report for FY94, as well as numerous NS/EP-related telecommunications initiatives underway. Many of these are organized according to responsible DOT operating administrations and are highlighted in the following text.

UNITED STATES COAST GUARD (USCG)

NS/EP TELECOMMUNICATIONS MISSION

USCG NS/EP objectives are threefold: to provide essential communications for the command and control of Coast Guard forces, to maintain the National Maritime Distress and Safety System, and to provide telecommunications assets, as required, to DoD in support of the National Command Authority.

TELECOMMUNICATIONS STAFF ORGANIZATION

The Office of Command, Control, and Communications (G-T) is the director for the Coast Guard's C3 support program. The Telecommunications Management Division (G-TTM) is the manager of the Coast Guard's telecommunications program. The program includes telecommunications planning, budget programming and policy, and radio frequency spectrum management.

During FY94, the Coast Guard chartered a Command, Control, Communications, Computers, Intelligence (C4I) and Sensors Project. Supported by G-T, the C4I and Sensors Project staff is tasked to define operational requirements and the functional relationships that support these requirements, define the Coast Guard's future C4I architecture, and develop a transition plan to implement it. The C4I and Sensors staff (G-OTT) reports to the Coast Guard Operational Information System (OIS) Guidance Team.

CURRENT/ONGOING NS/EP TELECOMMUNICATIONS ACTIVITIES

The USCG is conducting the following activities:

- ***Global Maritime Distress and Safety System (GMDSS).*** GMDSS was adopted as a treaty requirement at the 1988 Safety of Life at Sea Convention. The concept of GMDSS is being phased in to meet the February 1, 1999, deadline. Proceeding toward the deadline, the Coast Guard took another step in eliminating radiotelegraphy operations by scheduling a shutdown of all HF radiotelegraphy operations on April 1, 1995. Operations in the medium frequency (MF) band, including a continuous watch on the international distress frequency 500 kHz, ceased last year. The Coast Guard plans to initiate MF digital selective calling (DSC) installations at selected stations during FY95.

- ***UHF Satellite Communications (SATCOM).*** The Coast Guard is preparing a fielding plan for 27 High Speed Fleet Broadcast (HSFB) suites. This system will replace the lower data rate satellite circuit currently used to pass both operational and administrative message traffic. The HSFB system will also include a high frequency contingency capability. The installations will commence during FY95 and continue through FY98 on high- and medium-endurance (WMEC 270's only) cutters and polar icebreakers. Also, the Coast Guard plans to modify UHF SATCOM and UHF line-of-sight (LOS) transceiver equipment to provide both the DoD-mandated Demand Assigned Multiple Access (DAMA) capability and an additional SATCOM-capable transceiver to communicate with medium-endurance cutters equipped with newly acquired portable systems. STU-III-compatible INMARSAT-A terminal installations are complete.

- ***Video Teleconferencing (VTC).*** During the past year, the Coast Guard approved a VTC pilot project to evaluate VTC services. The project, cosponsored by Commandant (G-PRF), will lease equipment for sites at Coast Guard Headquarters, Training Center Petaluma, California, and the Reserve Training Center, Yorktown, Virginia. Original plans call for installation of FTS2000 Compressed Video Transmission Service (CVTS) at the three sites. However, future plans may include a conversion of CVTS to a less costly switched digital system. The project will measure and evaluate VTC cost savings over travel costs for meetings and conferences held at these training facilities. Secure VTC requirements are being analyzed separately.

- ***Communications System 2000 (COMMSYS 2000)***. COMMSYS 2000 is a strategic concept that began in 1992 to reengineer many of the Coast Guard's radio and record message services to improve efficiency. It will restructure the Coast Guard COMMSYS, making it less facility and resource intensive. Under COMMSYS 2000, the Coast Guard plans for only two fully manned long-range Communications Area Master Stations (CAMS) at Chesapeake, Virginia, and Point Reyes, California. The Coast Guard currently operates six manned communications stations (COMMSTA). The two CAMS will have a number of remote transmitter and receiver capabilities at the locations of these COMMSTA's. Also, the two CAMS would be capable of providing emergency backup capability by assuming the other's functions, including access to remote sites. The Pacific area has completed the consolidation of COMMSTA Guam's functions to Section Office, Marianas' operations center, with GMDSS functions conducted from CAMSPAC Point Reyes. COMMSTA Miami is now fully restored, following its destruction by Hurricane Andrew, and is a remote transmitting and receiving facility for CAMSLANT, Chesapeake, Virginia. The Coast Guard also plans to fully automate message processing in all Coast Guard communications centers.

- ***Electronic Key Management System (EKMS).*** The Coast Guard has taken another step toward EKMS. Installations of the Navy's Key Distribution System (NKDS) continue and COMSEC account consolidations are taking place to relieve the administrative burden on smaller accounts. NKDS uses PC's with two separate software applications, one to administratively manage the COMSEC account and the other to send transactions to the Navy using a STU-III. Installation of the NKDS and COMSEC account consolidations will complete phase I of the Navy's plan. Phase II will bring electronic transfer of keys from accounts to users using a standard data transfer device (DTD) and a STU-III interface. A limited production of the DTD's are currently being shipped to both COMSEC accounts and local users. The Coast Guard will continue to deploy an Over-the-Air-Distribution (OTAD) system as part of the EKMS. The plan will be fully implemented when the Navy transfers all operational keys to Coast Guard accounts electronically and the full complement of DTD's are distributed.

- ***Naval Modular Automated Communications System (NAVMACS).*** NAVMACS monitors and processes message traffic from the Navy's fleet satellite broadcast for Coast Guard cutters. The Navy's NAVMACS V2 System, which is aboard most military satellite-capable Coast Guard cutters (high- and medium-endurance cutters and polar icebreakers only), is being upgraded to prepare the system for a cryptographic equipment replacement and a system security enhancement called "Gate Guard." Gate Guard monitors message traffic to keep classified messages out of unclassified back-side system environments. System operational verification tests are ongoing and further plans for the use of Gate Guard are being discussed. The

cryptographic equipment upgrade will improve the system's performance on the Common User Digital Information Exchange System (CUDIXS) link. This link provides an additional channel for message traffic to the normal fleet broadcast channels. The ultimate objective is to speed up the data rate on fleet broadcast channels.

FEDERAL AVIATION ADMINISTRATION (FAA)

NS/EP TELECOMMUNICATIONS MISSION

The primary NS/EP objective of the FAA is to ensure continued safe and efficient operation of the National Airspace System (NAS) during periods of stress. This involves both the required operational telecommunications assets and telecommunications essential for C3 functions.

TELECOMMUNICATIONS STAFF ORGANIZATION

The Associate Administrator for Airway Facilities is responsible for all telecommunications policies and standards. All operational and administrative telecommunications management activities are performed within the Telecommunications Management and Operations (TM&O) Divisions within the NAS Operations Directorate. The Office of Information Technology is responsible for overall compliance with Federal Information Resources Management Regulations (FIRMR).

- ***Federal Aviation Administration Telecommunications Satellite (FAATSAT).*** FAATSAT will improve overall performance of operational air traffic telecommunications and provide path diversity to aid in eliminating single points of failure in the FAA telecommunications infrastructure. Satellite-based services will be provided among domestic air traffic facilities including Puerto Rico and Hawaii. FAATSAT will provide connectivity to facilities where terrestrial telecommunications are impractical, unreliable, or not cost effective. FAATSAT will also provide transportable and portable communications that can be rapidly deployed as needed for special events or emergencies. Vendor proposals are being evaluated with contract award expected in December 1994. Installation, test, and acceptance of initial sites should be completed by September 1995.

- ***Leased Interfacility NAS Communications System (LINCS).*** The infrastructure connecting all of the 20 Air Route Traffic Control Centers (ARTCC) and 110 vendor nodes was completed in October 1993. Installation of nodes at other major FAA facilities is ongoing. A total of 115 FAA nodes have been installed to date, with the remainder expected to be completed by the first quarter of FY95. The infrastructure for 11 of the 20 airspaces has been completed. Approximately 6,000 channels have been provisioned under the LINCS contract. An additional 7,500 channel orders are expected to be provisioned. Full implementation of LINCS is expected to be completed in 1996.

  LINCS satisfies requirements for recompetition of circuits, elimination of single point failures with improved access, and improved technical performance. The design of the LINCS network has been proven during several recent events, such as the Northridge earthquake and severe weather storms in the Southwest. During these situations, transmission paths have switched as designed and avoided potential outages.

FEDERAL HIGHWAY ADMINISTRATION (FHWA)

NS/EP TELECOMMUNICATIONS MISSION

As prescribed by E.O. 12656, FHWA and State Highway Agencies (SHA) will ensure the operation and maintenance of the highway network during national emergencies, including national defense, and natural and human-made emergencies.

TELECOMMUNICATIONS STAFF ORGANIZATION

The FHWA consists of the Washington, D.C., headquarters, nine regional offices, and a division office in each State. Each division office works daily with its respective SHA. The normal administrative organization is also used during a national emergency. Telecommunications responsibilities are primarily a collateral duty of the overall organization.

SIGNIFICANT ACCOMPLISHMENTS

The FHWA Emergency Communications System (ECS) was instrumental during the initial stages of Hurricane Andrew in obtaining essential highway information in the disaster area immediately following the storm for search and rescue missions and evacuation purposes. The information was obtained through FHWA's ECS connections with the SHARES program and participating stations. Since Andrew, several of the FHWA's stations have been activated in anticipation of pending disasters. During the recent tropical storm "Alberto," several region 4 stations were on alert as was a Civil Air Patrol (CAP) airplane to assist FHWA with aerial information about the highway infrastructure if needed.

FHWA is converting many of its stations to solid state technology and moving them closer to division and regional offices for quicker and better operations during natural disasters. Two main 1000 watt network ALE stations have been established to serve as network control stations. A third ALE station with 500 watts of power has been installed in the Washington, D.C., headquarters. This station will also service the Office of Emergency Transportation.

A 2-day FHWA Emergency Program and ECS course was developed and held in regions 1, 5, 9, and 10 this year. In addition, representatives from many regions attended a 40-hour training class held at the Sunair factory in Ft. Lauderdale, Florida. Attendees learned basic radio technical skills, repair and maintenance, hardcopy modem (Pactor) operations, FHWA radio system operations, and other related subjects.

Finally, a 2-year pilot program to provide radio expertise to FHWA ECS stations was formalized with the CAP in region 4. The program is going very well with designated CAP stations participating in FHWA quarterly communications exercises. A national MOU with the CAP is being developed to allow other regions to use it voluntarily. FHWA conducts four quarterly national ECS exercises and optional weekly radio checks. Time is also set aside during the national exercises for regions to conduct regional exercises.

CURRENT/ONGOING NS/EP TELECOMMUNICATIONS ACTIVITIES

FHWA initiatives in this area include developing HF ALE radio capability for headquarters operations; providing technical emergency preparedness and ECS training for its staff; providing portable radio stations, cellular telephones, and portable facsimiles to areas prone to natural disaster situations; upgrading hard copy equipment for radio operations; and developing an inexpensive 12/110-volt flyaway multimedia communications

package consisting of a 100-watt HF ALE radio, laptop computer, cellular/satellite phone, Pactor, facsimile, and a printer.

MARITIME ADMINISTRATION (MARAD)

NS/EP TELECOMMUNICATIONS MISSION

One of MARAD's vital NS/EP telecommunications missions is to ensure that U.S. merchant ships and ships of the Ready Reserve Force (RRF), a part of the National Defense Reserve Fleet, can communicate with the DoD during emergency or exercise operations. In addition, the MARAD Telecommunications Center provides record message NS/EP support to the Secretary of Transportation and much of the DOT headquarters.

TELECOMMUNICATIONS STAFF ORGANIZATION

Responsibilities are handled as a collateral duty by the overall organization.

SIGNIFICANT ACCOMPLISHMENTS

- ***Exercise BELL BUOY 94.*** MARAD supported its agreement with the Navy Commander in Chief (CINC) for Pacific Fleet by jointly conducting communications interoperability exercises in the Naval Control of Shipping Exercise BELL BUOY 94. This exercise involved more than 100 U.S. flag merchant ships. The communications tests were designed to test procedures for merchant ships communications with NCS organizations and to exercise emergency communications procedures. The successful exercise was focused on the new approach to regional conflicts with two main shipping control units established in Japan and Singapore. Geographic group calls to vessels were successfully tested.

- ***RRF compliance with Global Maritime Distress and Safety System (GMDSS).*** MARAD continues to ensure the upgrade in communications and safety equipment on board RRF vessels. The GMDSS is being phased in through 1999 affecting certain changes to the ships' communication and distress alerting systems. MARAD has ensured compliance to date with the purchase of 406 MHz Emergency Position Indicating Radio Beacons and NAVTEX marine safety receivers.

- ***United States Navy/Merchant Marine Communications (MERCOMMS).*** The U.S. Navy/Merchant Marine Communications Interoperability Working Group was reestablished. The MERCOMMS group consists of MSC, Navy, FCC, MARAD, USCG, radio officers, and private sector representatives who meet bimonthly to discuss communications interoperability problems between the commercial sector and the DoD/Navy. The group has begun looking at security requirements for classified/sensitive information exchange, dissemination of safety and warning information, and emergency call-up procedures for U.S.-flag merchant ships requiring U.S. Navy (USN) assistance.

- ***International Maritime Satellite (INMARSAT).*** MARAD placed its portable INMARSAT land transportable terminal on board the RRF vessel EMPIRE STATE, which was activated for U.S. troop withdrawal from Somalia. This unit allowed for voice and message communications to vessels and public switched networks as an emergency backup for the vessel's existing INMARSAT terminal.

CURRENT/ONGOING NS/EP TELECOMMUNICATIONS ACTIVITIES

- ***Defense Communications Course***. MARAD and the U.S. Merchant Marine Academy's Continuing Education Department continue to provide a bimonthly defense communications course. This three-and-one-half day course is part of the 2-week National Sealift Training Program. The course was developed by and continues to receive support from the Navy, Coast Guard, FCC, and private sector to better prepare senior deck officers to perform communications functions during a national emergency. Lessons learned from Operations Desert Shield/Storm were incorporated in this program. Seven classes of 12 to 15 students were enrolled in this past fiscal year.

PENDING ISSUES

A major concern of the USN and MARAD is the lack of communications interoperability among naval forces and merchant ships, both RRF and U.S.-flag vessels in active service. However, the increased carriage of INMARSAT terminals aboard U.S. Navy warships and fleet support vessels does offer a future medium for interoperability.

The adoption by the International Maritime Organization (IMO) of the GMDSS and the pending FCC changes to the *1934 Communications Act* will result in large-scale changes in communications to vessels at sea, equipment carriage requirements, and radio officer requirements. Crew members responsible for communications aboard vessels must be technically and operationally capable. The defense communications course provides some training in this area. The FCC will specify exact training requirements for GMDSS. GMDSS is designed to provide ship-to-shore alerting for emergencies, and ship-to-ship or ship-to-rescue forces communication. The system emphasizes more automated and satellite-based equipment. These IMO changes are to be phased in by 1999.

MARAD would like to see the MERCOMMS Interoperability Working Group continue. Though the group did not meet during FY93 because of a Navy reorganization, it was reestablished in FY94.

FEDERAL TRANSIT ADMINISTRATION (FTA)

NS/EP TELECOMMUNICATIONS MISSION

FTA's primary NS/EP telecommunications mission is to maintain or secure an alternate means of establishing communications in times of disaster for end users (throughout the United States) of major applications systems located at the DOT Computer Center Communications (DoTCC).

TELECOMMUNICATIONS STAFF ORGANIZATION

The communications team is responsible for carrying out this mission and is part of the Office of Management Information System Staff (TAD-20). The team works in cooperation with the DoTCC staff and AT&T FTS2000 network staff.

SIGNIFICANT ACCOMPLISHMENTS

For the past 5 years, FTA's communications team has carried out mock disaster recovery testing at the selected DoTCC hotsite facility vendor. These tests involve the switching of data communications traffic from the FTA regional offices to the hotsite facility to effect continued operations and minimize the downtime during an actual disaster.

This preparedness was rewarded during the recent earthquake in California when FTA's communications were not disrupted. In that emergency, an E-Mail connection was established that permitted communications while telephone lines were inoperative or jammed.

DEPARTMENT OF ENERGY (DOE)

NS/EP TELECOMMUNICATIONS MISSION

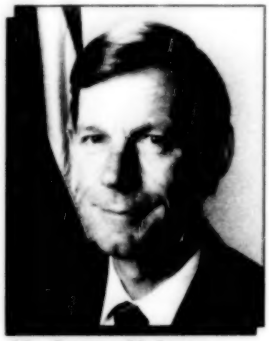
The Department's NS/EP telecommunications mission is to provide secure and reliable emergency communications to support these essential departmental NS/EP functions during emergencies:

- Provide information on energy supply and demand conditions and on requirements for and the availability of materials and services critical to energy supply systems.
- Identify energy facilities essential to the mobilization, deployment, and sustenance of resources to support national security and welfare, and to develop energy supply and demand strategies to ensure continued provision of minimum essential services in national security emergencies.
- Ensure the security of nuclear weapons or devices in the custody of the Department, as well as all other departmental programs and facilities.
- Manage all emergency planning and response activities pertaining to departmental nuclear facilities.

TELECOMMUNICATIONS STAFF ORGANIZATION

The Department of Energy is organized along programmatic and functional lines. Major systems with NS/EP responsibilities, such as those supporting the Power Marketing Administrations and the Nuclear Emergency Search Team, are the operational responsibility, respectively, of the individual Power Marketing Administrations and the Assistant Secretary for Defense Programs.

MR. JAMES J. HALL, JR.
Committee of Principals



MR. ROBERT M. LEWIS
Council of Representatives

- Within the Department, the Deputy Assistant Secretary for Information Management has the overall responsibility for NS/EP policy and telecommunications management and ensures compliance with pertinent national and international regulations. The Deputy Assistant Secretary represents the Department on the NCS COP, and an individual within the Office of IRM Policy, Plans, and Oversight is the Department's representative to the NCS COR.
- Departmental NS/EP policy and plans are developed and the Department's NS/EP telecommunications activities are coordinated by the Director of IRM Policy, Plans, and Oversight, ensuring that they are consistent with national directives. The Director also provides representation on the NCS emergency management teams.
- The Department's internal TSP program is managed by the Information Technology Operations Division. The Energy Industry TSP Sponsorship Program is managed by the Office of Emergency Management.

SIGNIFICANT ACCOMPLISHMENTS

Mutual Aid (Federal/State/Local Communications)

- An MOU between the Nevada Operations Office, the State of Nevada, municipalities, and utilities has been signed with a goal of developing a statewide trunked radio system.

- Agreements have been reached between the Nevada Test Site Occupational Medicine and the Las Vegas, Nevada, medical community to provide communications through the county 911 console to various hospitals in Las Vegas, Nevada. In the interest of patient privacy, this will be a dedicated radio network for medical use only.

- The Albuquerque, New Mexico, Operations Office has procured and installed five backbone repeaters and the network base station for the State of New Mexico's Department of Public Safety. This establishes a mutual medium for communications with State and local authorities during joint Federal/State emergencies or accidents/incidents.

- The Oakland, California, Operations Office successfully transferred its California Warning System circuit and equipment to its new site. This system is used to support Oakland's ability to communicate with State and local agencies in the event of an emergency.

Emergency Operations Centers (EOC)

- The Department established EOC's at its headquarters (Forrestal Building) in Washington, D.C., in Germantown, Maryland, and in the following key locations: Albuquerque, New Mexico (Operations); Las Vegas, Nevada (Operations); Oak Ridge, Tennessee (Operations); Idaho Falls, Idaho (Operations); Richland, Washington (Operations); Las Vegas, Nevada (Remote Sensing Lab); Los Alamos, New Mexico (Los Alamos National Laboratory).

  The field EOC's are linked with the headquarters' EOC by FTS2000 T1 lines that provide voice, data, and video teleconferencing capabilities. VSAT's have been installed at the EOC's to provide a diverse, full-time satellite transmission redundancy to the terrestrial T1 services. This VSAT system is configured to provide 10 dedicated voice channels, or one to each EOC; five nondedicated, or assignable, voice channels, and five assignable data circuits (56 kbps) that can be directed by the network control station to any EOC in the network (limited to two voice channels and one data channel per EOC). The VSAT system provides a maximum of 20 circuits to be operational at one time with connectivity controlled by the network control station located at the Forrestal Building Emergency Operations Facility EOC. A backup network control station is located at the Las Vegas, Nevada, EOC for disaster recovery purposes.

- A 240-port digital voice conferencing system was installed in the Savannah River EOC. This new system will provide up to 96 ports on a single conference without degradation of signal, or 48 simultaneous conferences with the flexibility of "preset," "meet-me," or "operator controlled" access.

Telecommunications Service Priority System

- DOE headquarters processed 24 new TSP assignment requests during FY94, bringing the Department services with approved TSP assignments to 173. It also completed a 100 percent revalidation of all approved TSP assignments during the first quarter of FY94.

Emergency Notification

- The NS/EP posture of the Savannah River facility was enhanced by replacing its radio

paging system with a Unit Page Model 30, which contains an automatic, fully redundant backup feature. This Model 30 increases the sitewide paging capability from 13 to 14 pages per minute to more than 100 pages per minute. This paging system is the primary means for contacting Savannah River's emergency response organizations.

Private Branch Exchange (PBX)

- The new digital PBX was procured and installed for Western Area Power Administration headquarters.

CURRENT/ONGOING NS/EP TELECOMMUNICATIONS ACTIVITIES

Mutual Aid (Federal/State/Local Communications)

- Lawrence Livermore National Laboratory, San Francisco, California, is upgrading its Emergency Dispatch Center to enhance the laboratory's ability to respond to on- and off-site emergencies by providing access to critical data and interfaces to the new 800-MHz radio systems now in operation by emergency services at Alameda County and the City of Livermore, California.

- Engineering and frequency approvals have been received for an areawide trunked radio system employing a "tall tower" concept to replace the existing VHF conventional radio networks with a UHF trunked radio system at Oak Ridge, Tennessee. Such a system will provide much improved service to mutual aid-related incidents and coverage for emergency operations. This project is currently waiting funding approval.

Emergency Operations Centers

- EOC's at Aiken, South Carolina, and Chicago, Illinois, will be added to the Department's EOC system during FY95.

- The EOC integration project at the Richland Operations Office has completed the definitive design stage. The relocation of the EOC to temporary quarters was completed in February 1994. Selection of the construction contractor is expected in the first quarter of FY95, with the remodel of the EOC expected to be completed by the third quarter of FY95.

- The Schenectady, New York, Naval Reactors Office is processing a procurement action to obtain an automated emergency notification system to support the Emergency Communications Center.

Telecommunications Service Priority System

- The DOE continues to review and sponsor TSP applications from the energy industry (electric power, natural gas, petroleum and coal).

Diverse Routing

- Coordination is continuing with the local telephone company to provide true alternate routing (physical separation) of off-site trunking cables that service the Savannah River Operations Office's incoming and outgoing commercial trunks, business individual lines, FTS2000 network traffic, private line circuits/services, and miscellaneous service.

  Due to the high cost of providing such service via landline, efforts are underway to evaluate other options, such as use of microwave, VSAT, or other competitive sources.

- Work is proceeding at the Savannah River Operations Office to provide state-of-the-art, underground, fiber-optic, interarea networks in a dual ring configuration to each of the site's PBX's to ensure continuity of operations in the event of a single-point failure.

- An upgrade to the Idaho National Engineering Laboratory (INEL) Communication System Fiber Transmission Network is planned, which will provide a second Snake River crossing, eliminating a single point of failure and completing a physical ring topology. This will provide capability for self-healing networks and alleviate loss of communications with remote plant facilities should a backbone segment be severed.

Radio

- The Western Area Power Administration is addressing the replacement of its VHF radio system operating in the 162-174 MHz and 406-420 MHz frequency bands. This replacement is necessitated by the NTIA's policy to reduce channel bandwidth for frequencies less than 512 MHz from 25 KHz to 12.5 KHz between 1995 and 2005.

- Upon approval, a Data Encryption Standard (DES) radio repeater is planned for installation to protect and improve radio communications conducted by the Site Incident Response Organization and Radiological Control personnel at the Bettis Atomic Power Laboratory.

- At the Oakland, California, Operations Office, the Lawrence Livermore National Laboratory has obtained approval and funding for a multisite trunked radio communications system. This system is intended to replace obsolete systems now serving emergency services and provide greater flexibility in managing spectrum and equipment.

Private Branch Exchange

- An additional 144 station lines are being added to the Albuquerque Operations Office's Disaster Avoidance private automatic branch exchange (PABX) to accommodate increased requests for diverse route connections to the PSN and FTS2000.

Cellular Telephone Services

- A second cellular telephone service provider is now available in southeastern Idaho. The Idaho Operations Office will evaluate its services for additional diversity purposes.

Secure Voice

- Over 1,300 STU-III's have been installed at Naval Reactor Program locations. In addition, approximately 160 Motorola Sectel 1500 STU-III's with a secure speaker phone capability have been purchased for use at Naval Reactor locations.

Power for Departmental Telecommunications Facilities

- Implementation continues on providing backup emergency electrical power to the principal Savannah River telephone exchange complex from an existing high-capacity generator (primary and spare).

- INEL is upgrading the emergency power for its INEL-wide paging system. This upgrade will provide backup power to key repeater facilities within a 50 to 60 mile radius of Idaho Falls, Idaho. The need for this upgrade was occasioned by a recent earthquake in California that caused a major power outage in southeastern Idaho, rendering the paging system inoperable at these repeater facilities.

- Procurement and installation of an emergency generator to support the third major system

hub (Test Area North) at the INEL was planned for FY94. However, this action is being delayed due to funding constraints.

- The Schenectady Naval Reactor Office is processing a procurement action to obtain an emergency diesel generator for the PBX at its Knolls site.

DEPARTMENT OF VETERANS AFFAIRS (VA)

NS/EP TELECOMMUNICATIONS MISSION

The VA NS/EP mission involves the following functional areas:

- Emergency inpatient and outpatient care and treatment in VA medical facilities, and participation with the DHHS as provided by interagency agreement
- Emergency compensation, pension, rehabilitation, education, and insurance payments consistent with overall Federal plans for the continuation of Federal benefit payments
- Emergency insurance and loan guarantee functions in accordance with various emergency conditions
- Primary health care adjunct to DoD during a war or national emergency
- Emergency planning and response to radiological emergencies as assigned in E.O. 12657
- Emergency planning and response to the *Federal Response Plan*
- VA representation to the appropriate NS/EP organizations responsible for the national system for emergency coordination, and fulfillment of support responsibilities assigned by E.O. 12656.

TELECOMMUNICATIONS STAFF ORGANIZATION

The VA Office of Telecommunications supports the NS/EP requirements of the Department, which include the Veterans Health Administration, Veterans Benefits Administration, National Cemetery System, and VA staff support organizations.

MS. NADA D. HARRIS
Committee of Principals

MR. HOWARD D. BOYD
Council of Representatives

- The function of directing VA-wide NS/EP programs is assigned to the Assistant Secretary for Acquisition and Facilities.
- The VA Office of Telecommunications, under the Deputy Assistant Secretary for IRM, through the Assistant Secretary for Finance and Information Resource Management, is charged with providing all aspects of telecommunications support to enable the VA to fulfill its mission.
- The primary contact for all aspects of VA NS/EP telecommunications activities is the Associate Deputy Assistant Secretary for Telecommunications.

SIGNIFICANT ACCOMPLISHMENTS

Networking VA Local Area Networks

- VA LAN's are being interconnected through the VA WAN using the latest internetworking

technologies available. VA medical centers, veterans benefits offices, national cemetery sites, and VA administrative offices are being interconnected so that they may have more efficient access to veterans information systems. This interconnection improves service to the veterans and provides for more efficient administration and operation of VA business systems.

- Using high-speed communications in the network, VA medical centers are improving services to veterans using imaging for x-ray, magnetic resonance imaging, etc., exchange. This allows real-time remote diagnostic, counseling, and other medical services throughout the VA medical system. Other VA veterans service centers will be using this technique in the near future to expedite information exchange in providing services to veterans.

CURRENT/ONGOING NS/EP TELECOMMUNICATIONS ACTIVITIES

VA maintains three major telecommunications systems to support its NS/EP requirements during a national emergency: Integrated Data Communications Utility (IDCU), the VA Nationwide Teleconferencing System (VANTS), and the VA HF Emergency Radio Network. Considerable attention was given to NS/EP-related matters in developing and implementing these telecommunications systems.

VA Nationwide Teleconferencing System (VANTS)

- The VANTS replaced the Selective Signaling Voice Conferencing System (SS-4) and provides 384 ports of interactive voice conferencing. The system allows one large 384-port conference or any number of smaller conferences using up to the 384-port maximum capability. The system operates over the commercial network through Multilink, Inc. VANTS was migrated to the FTS2000 network during FY94. The VANTS operations center is currently at the VA Medical Center, Martinsburg, West Virginia.

California Emergency Radio Communication

- There are 28 VA facilities in California interconnected through an Emergency Command Control Radio Network (ECCRN); a radio telephone patching capability is available at all sites. VA is a member of the Los Angeles Federal Board Emergency Radio Network at the VA Medical Center, West Los Angeles, California (Wadsworth Division).

VA Nationwide HF Emergency Radio Communications

- VA maintains multiple HF emergency radio sites throughout the country including seven corporate HF radio sites. These stations provide essential radio communications during an emergency and/or when other communication resources fail. Additional emergency radios will be placed in VA's four medical regions during FY95.

SHARES

- VA is also an active member of the SHARES Program, providing emergency radio communications whenever required and technically feasible.

Secure Telephone Used in VA NS/EP

- Eighty-three STU-III's are placed at strategic VA locations in support of the VA's essential emergency functions. These units provide the capability to pass secure information within the VA and between the VA and other Federal organizations involved in NS/EP operations.

Integrated Data Communications Utility (IDCU)

- The IDCU provides an effective and efficient data communication network to better serve the Nation's veteran population and enable more professional management of the business activities of the Agency. More than 800 locations (including the CONUS, Alaska, Puerto Rico, Hawaii, and Manila) communicate using this network. The IDCU has proven invaluable in supporting NS/EP operations in the natural disasters experienced during this decade in addition to the day-to-day operation of VA. This network replaced the previous WAN and has been fully operational since July 1991.

CENTRAL INTELLIGENCE AGENCY (CIA)

This report is included as part of the CLASSIFIED supplement to the FY94 NCS Annual Report.

THE JOINT STAFF (JS)

NS/EP TELECOMMUNICATIONS MISSION

The Director for Command, Control, Communications, and Computer (C4) Systems Directorate (J-6) provides assistance to the Chairman of the Joint Chiefs of Staff in the following areas:

- Develops policies, plans, and programs for C4 systems
- Ensures adequate C4 support to the CINC's and the National Command Authorities for joint and combined military operations
- Conceptualizes future C4 systems design, and provides direction to improve command and control systems.

TELECOMMUNICATIONS STAFF ORGANIZATION

The J-6 consists of the Director and two deputy directors. Each Military Department has approximately equal representation by rank and number throughout the Directorate. The Director for C4 Systems, Deputy Director of Unified and Specified Command Support, and Deputy Director of Defensewide Support are general or flag officers from the Military Departments. Exhibit 4-2 depicts the organization of the J-6 Directorate.

MG David J. Kelley, USA
Committee of Principals

Col. Stephen Dalrymple, USAF
Council of Representatives

SIGNIFICANT ACCOMPLISHMENTS

(Refer to DoD section.)

CURRENT/ONGOING NS/EP TELECOMMUNICATIONS ACTIVITIES

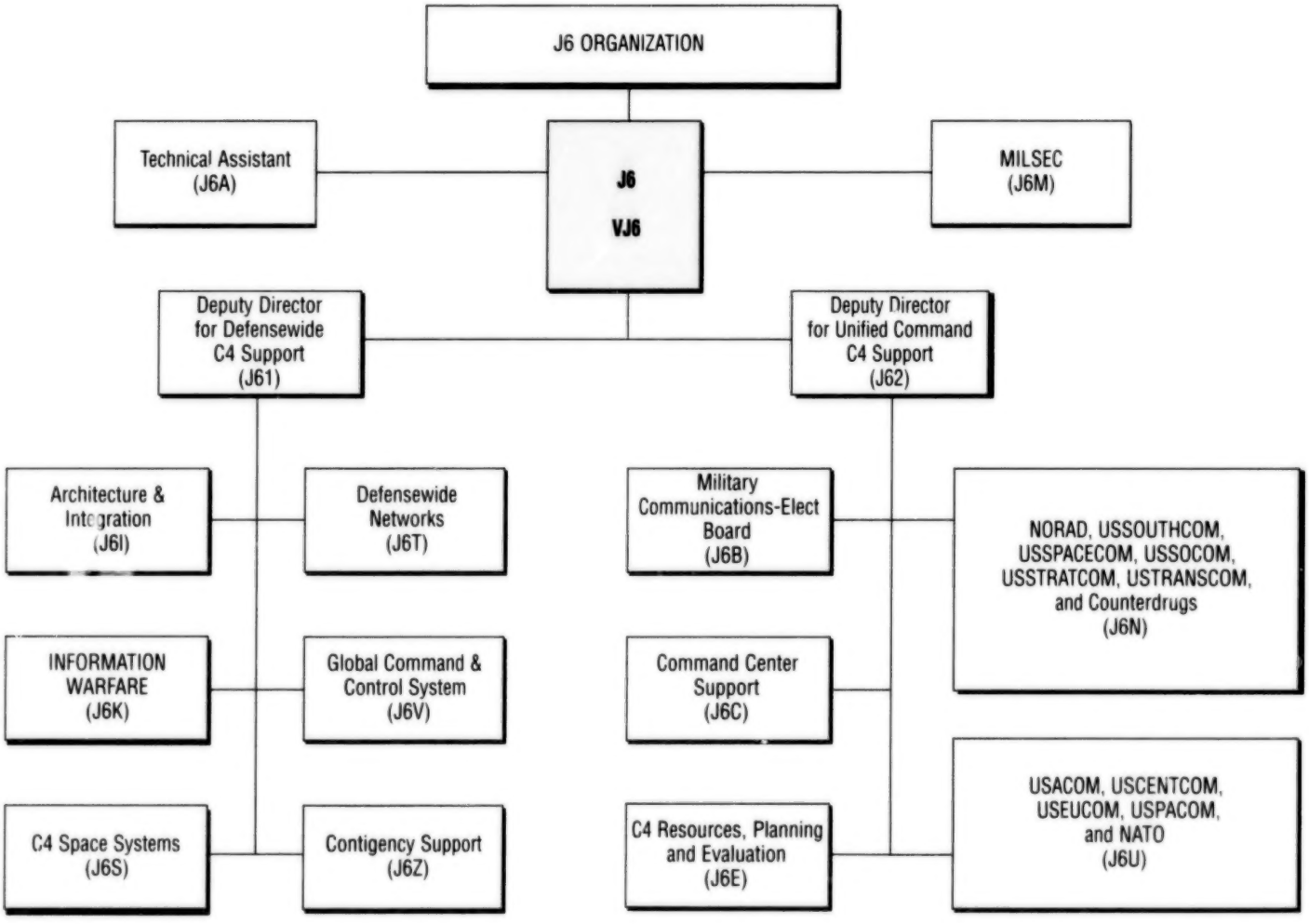
(Refer to DoD section.)

PENDING ISSUES

(Refer to DoD section.)

EXHIBIT 4-2

Command, Control, Communications, and Computer (C4) Directorate (J-6)


J6 ORGANIZATION
Technical Assistant (J6A)
J6
VJ6
MILSEC (J6M)
Deputy Director for Defensewide C4 Support (J61)
Deputy Director for Unified Command C4 Support (J62)
Architecture & Integration (J6I)
Defensewide Networks (J6T)
INFORMATION WARFARE (J6K)
Global Command & Control System (J6V)
C4 Space Systems (J6S)
Contigency Support (J6Z)
Military Communications-Elect Board (J6B)
Command Center Support (J6C)
C4 Resources, Planning and Evaluation (J6E)
NORAD, USSOUTHCOM, USSPACECOM, USSOCOM, USSTRATCOM, USTRANSCOM, and Counterdrugs (J6N)
USACOM, USCENTCOM, USEUCOM, USPACOM, and NATO (J6U)

(JR) 8/94.31-1

GENERAL SERVICES ADMINISTRATION (GSA)

NS/EP TELECOMMUNICATIONS MISSION

The GSA Information Resources Management Service (IRMS) provides policy, direction, assistance, and coordination for the acquisition, management, operation, and use of automated data processing (ADP) equipment, telecommunications equipment, and related services to the Federal Government under routine and critical conditions.

The GSA IRMS is responsible for maintaining the FTS2000; the Federal Secure Telecommunications System (FSTS); the Washington Interagency Telecommunications System (WITS); the Aggregated Services Procurement (ASP) program; the Purchase of Telephone Services (POTS) contracts; the Telecommunications Services Contract (TSC); and various ADP and secure telecommunications support services. The GSA IRMS also maintains the FIRMR's, promulgates Federal telecommunications standards, and serves as the Financial Manager of the Information Technology Fund.

In accordance with E.O. 12472, GSA is also responsible "to ensure that federally owned or managed domestic communications facilities and services meet the national security and emergency preparedness requirements of the Federal civilian departments, agencies and entities." Consistent with the responsibilities assigned by E.O. 12472, the *Federal Response Plan,* developed under the *National Plan for Telecommunications Support in Non-Wartime Emergencies* in support of FEMA under *Public Law 93-288*, and the *Federal Emergency Plan D*, GSA also provides:

- Four Zonal Emergency Communications Planners (each zone consists of two or more regions) and six Regional Emergency Communications Planners to support NCS planning activities
- NCS Regional Managers for the 10 standard Federal regions
- Federal Emergency Communications Coordinators (FECC).

MR. DON HARDESTY
Committee of Principals

MR. GEORGE F. FLYNN, JR.
Council of Representatives

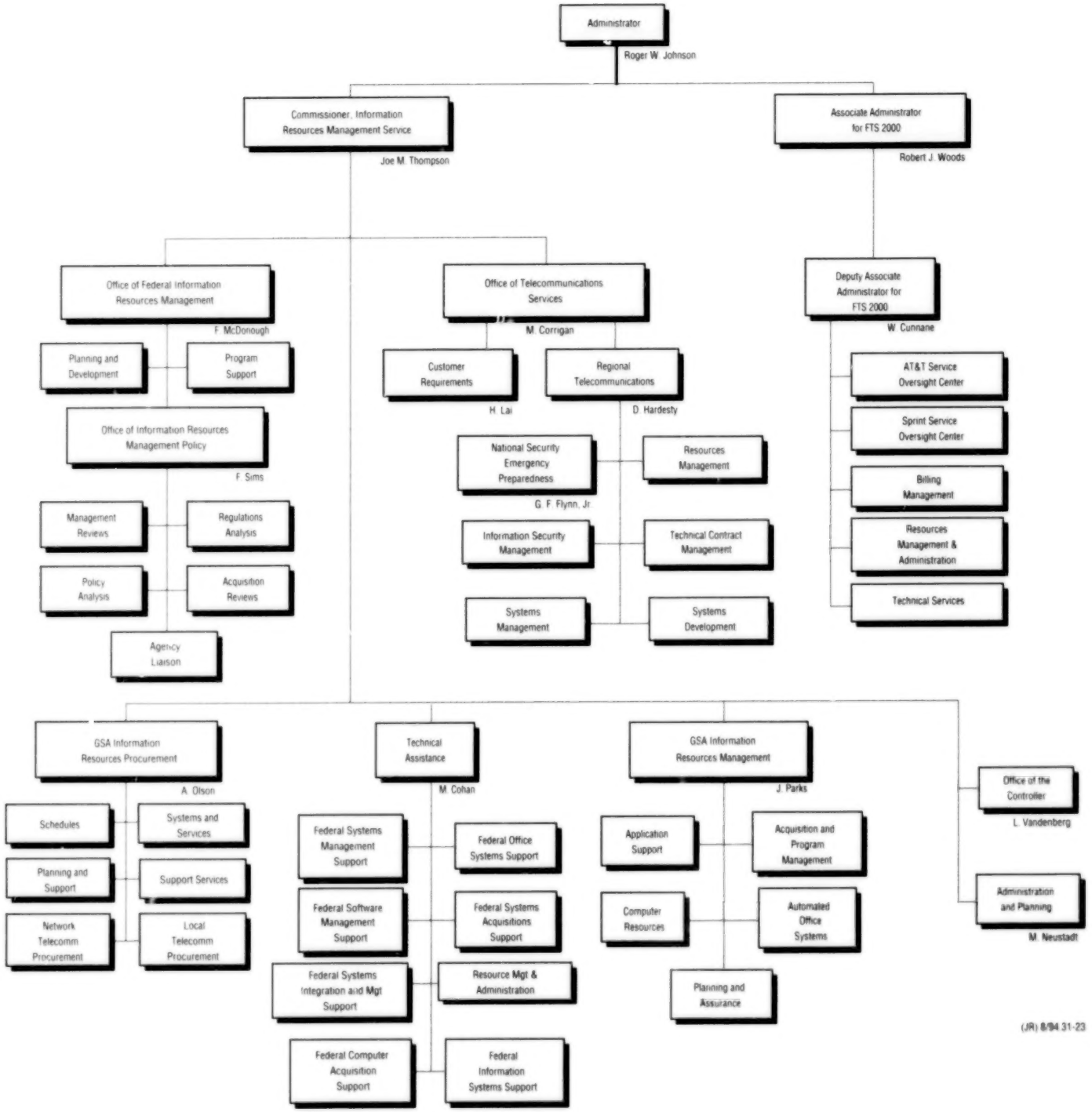
TELECOMMUNICATIONS STAFF ORGANIZATION

The regional IRMS within GSA is organized into a four-zone configuration with field offices in the 10 Uniform Federal Regional Council Cities and the National Capital Region.

The IRMS National Security Emergency Preparedness Division is composed of the Emergency Preparedness Branch and the Policy, Plans, and Programs Branch. These branches coordinate GSA NS/EP telecommunications service provisioning (e.g., FTS2000, WITS, ASP, and POTS); policy formulation activities with GSA regional and zonal offices; regulatory responsibilities; standards development and promulgation; and COP/COR responsibilities. Exhibit 4-3 depicts the organization of GSA.

EXHIBIT 4-3

Organization of the General Services Administration



SIGNIFICANT ACCOMPLISHMENTS

GSA Zonal Emergency Planners and Coordinators, and Federal Emergency Communications Coordinators provided rapid economical communications services to meet emergency requirements of participating Federal agencies in approximately 39 Presidentially declared disasters during this reporting period, including floods, fires, hurricanes, earthquakes, and tornadoes.

GSA provided significant telecommunications support to the Northridge earthquake post-disaster efforts. A GSA Region 9 employee was dispatched to the DFO in Pasadena, California, on January 17, 1994, when the earthquake hit. Telecommunications and computer services were provided for the DAC, Earthquake Service Centers (ESC), and Outreach Offices.

GSA Emergency Communications Coordinators utilized sophisticated telecommunications technology to meet new, leading edge customer requirements. For example, satellite interactive video service was used and a variety of television projects were coordinated, including the installation of a television studio uplink facility; mobile vans for live recovery channel transmission; down link satellite dishes and television sets for monitoring the Recovery Channel; and cable television locations to provide service at the DAC's and ESC's. The FTS2000 network was used extensively to bypass congestion in the PSN.

GSA has improved the Government's NS/EP capabilities and readiness through accomplishment of the following NS/EP telecommunications activities:

- Initiated direct dial-up E-Mail connections to the NCS and FEMA.
- Coordinated the installation of GETS into the FTS2000.
- Improved the capability of the FTS2000 by including satellite backup and mobile interactive services.
- Provided the Zonal/Regional Emergency Planners with laptops, printers, and upgraded software to facilitate improved reporting and coordination efforts during natural disasters and emergencies.
- To enhance readiness and NS/EP strategic planning for GSA and NCS member agencies, GSA representatives participated in Interagency Group meetings of the NEMT and exercises pertaining to classified national-level activities directed by the White House.
- A senior GSA manager supported GSA and the NCS by serving as an official member of the delegation for the United States to study Group 8 Terminal Equipments and Protocols for Telematic Services at the ITU. The GSA representative complemented the NS/EP and Government telecommunications knowledge required to assist in the considerations of the U.S. delegation, providing expertise which the group did not otherwise have.
- GSA conducted training to enhance the capabilities of the NCS IMA to perform telecommunications functions for GSA and the NCS in the response/recovery phases of disasters and emergencies.
- GSA NS/EP managers briefed representatives of the OSTP and COP/COR members on GSA's NS/EP roles, responsibilities, and telecommunications technical capabilities.
- GSA's NS/EP managers assisted and provided policy expertise and recommendations in planning activities to develop the *CRIS Concept of Operations and Implementation Plan*.
- GSA NS/EP managers, Emergency Planners, and Federal Emergency Coordinators participated in discussions at the NCS Regional Managers Conference, which included issues relating to Regional Manager emergency field operations,

i.e., Listing of Required Classified Documents; Custodial Training; Fly Away Kits; Notification Procedures; Emergency Information Management; and Support to Small Business Administration disaster declarations. The conference provided valuable training and information exchange for all participants.

- GSA NS/EP managers, Emergency Planners, and Federal Emergency Coordinators actively participated in the NCS/FEMA Communications Emergency Preparedness Seminar. Presentations were given by GSA personnel on Communications Support During Emergencies, NCC Operations, and GSA's National and Regional Support During Disasters. This seminar promoted a better understanding of the emergency preparedness responsibilities of FEMA, GSA, and NCS member organizations.

- A GSA NS/EP manager participated in a symposium on Evolving the National Information Infrastructure for senior Government and industry participants at the Naval War College in Newport, Rhode Island. The symposium examined key issues that affect evolution of the NII as it relates to Government telecommunications and information policy.

CURRENT/ONGOING NS/EP TELECOMMUNICATIONS ACTIVITIES

GSA's NS/EP E-Mail system is operational with the FEMA and the NCS. The E-Mail system facilitates the transmission of reports and communications among select GSA, FEMA, and NCS emergency response personnel. Recommendations are being prepared to ensure the development of a network/service that is more reliable and accessible than the current in-place network/service.

- A GSA senior staff member continues to serve on the NCS Vision 21 MFA I (NCS Process/Services) Team to assist in the review and revalidation of the NCS planning process.

- To ensure that Federal telecommunications systems can support the NS/EP missions of Federal, State, and local emergency officials, senior NS/EP Managers from GSA participate on the NCS Vision 21 MFA VI (NII), and the IITF.

- GSA continues to participate in the SHARES HF Radio Working Group to enhance the agency's emergency backup communications capability in support of NS/EP requirements.

- GSA solicited comments and recommendations from industry, government, and the public on the FTS2000 replacement concept and as a result, the GSA AWG issued its post-*FTS2000 Acquisition Alternatives White Paper.* This paper provides initial alternatives for consideration by Congress, agencies, industry, and GSA, relative to telecommunications acquisition in the post-FTS2000 era. The AWG is analyzing the alternatives and anticipates release of a report describing these analyses.

- GSA NS/EP managers represent GSA in wireless telecommunications services activities sponsored by the NCS, NIST, and the NSTAC IES. GSA is staying abreast of developments in this area to determine the benefits to disaster and emergency activities.

- GSA continues to stay apprised of all technological opportunities and plans to augment its current capabilities with the latest technology as it comes to fruition in order to support our client agency requirements.

- GSA continues to educate its workforce through the GSA Telecommunications Development Institute located in Kansas City, Missouri. The curriculum offered by the Institute contributes to ensuring that GSA can continue to effectively support NS/EP activities during this period of dynamic change in technology and industry infrastructure.

- GSA's NS/EP managers actively represent GSA at the senior level in the following national policy and planning organizations: the National Security Telecommunications and Information Systems Security Committee (NSTISSC); the U.S. Military Communications Electronics Board; the NII Security Issues Forum; and GITS Working Group.

UNITED STATES INFORMATION AGENCY (USIA)

NS/EP TELECOMMUNICATIONS MISSION

USIA Voice of America (VOA) Broadcast System is validated as an NCS asset and available to the NCS primarily during international emergencies. The Radio Broadcast System, which provides worldwide coverage, is equipped with high-powered broadcast transmitters and a staff to coordinate program schedules, facilities, and circuits. The entire staff is available to operate the network with programming material provided by the NCS or its designated representative.

TELECOMMUNICATIONS STAFF ORGANIZATION

The Agency's telecommunications element assigns members to the NCS COP/COR. The Director of the USIA assigned the authority to implement NS/EP procedures to the COP.

CURRENT/ONGOING NS/EP TELECOMMUNICATIONS ACTIVITIES

The VOA continues to update its facilities and procedures to ensure operations during an international emergency. These updates are comprehensive and cover localized events such as demonstrations in Washington, D.C.; localized emergencies, such as fires and bombs; international emergencies, such as terrorist incidents; and conventional and/or nuclear war. All actions required under NS/EP and TSP procedures are being accomplished in close coordination with day-to-day operating facilities that must be operational in emergency conditions. Interoperability considerations are addressed at the time of validation by the NCS.

MR. GARY W. BARNETT
Committee of Principals
Council of Representatives

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA)

NS/EP TELECOMMUNICATIONS MISSION

"The Administrator of the National Aeronautics and Space Administration (NASA) shall (pursuant to E.O. 12656) coordinate with the Secretary of Defense to prepare for use, maintenance, and development of technologically advanced aerospace and aeronautical-related systems, equipment, and methodologies applicable to national security emergencies."

NASA's Associate Administrator for the Office of Space Communications (OSC) has programmatic responsibility for representing the organization, on behalf of the Administrator, in the NCS process. The OSC plans, develops, acquires, and operates worldwide tracking, communications, and data facilities and provides essential services to both classified and unclassified flight projects of NASA and other Government agencies. These projects encompass planetary spacecraft, earth-orbiting satellites, space shuttle missions, sounding rockets, balloons, and aeronautical test vehicles.

The following NASA NS/EP telecommunications assets support NASA's mission-critical (operational, administrative, and programmatic) EEF's, under the Space Act of 1958, as amended; E.O.'s 12472, 12656, and 12919; and NSDD's 47, 97, and National Security Directive 56:

- NASA Operational Communications System (Nascom)
- NASA Tracking and Data Relay Satellite System (TDRSS)
- NASA Program Support Communications Network (PSCN).

MR. CHARLES T. FORCE
Committee of Principals

MR. ARTHUR L.C. SIGUST
Council of Representatives

TELECOMMUNICATIONS STAFF ORGANIZATION

Exhibit 4-4 shows the NASA staff elements that have programmatic responsibility for Nascom, TDRSS, and PSCN. The Space Network Division is responsible for TDRSS, and the Communications and Data Systems Division manages Nascom and PSCN.

SIGNIFICANT ACCOMPLISHMENTS

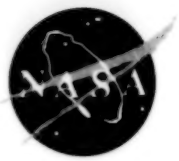
NASA continues supporting the NCS in achieving its Presidentially approved missions, goals, and objectives as required by E.O.'s 12472, 12656, and 12919, and NSDD's 47 and 97.

Nascom

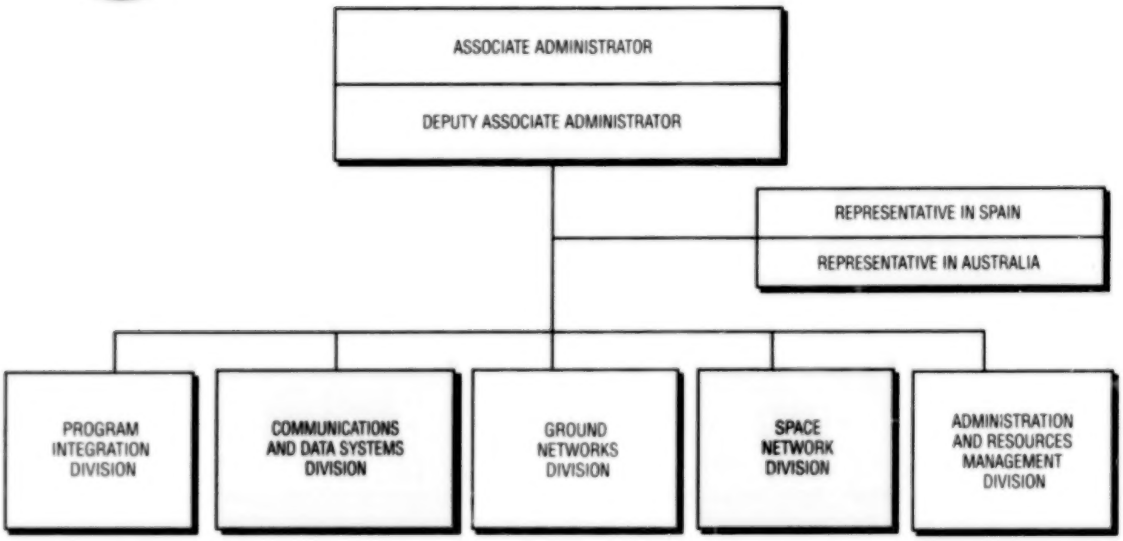
NASA's mission operational telecommunications network provides communication services used in the operational conduct of flight missions, programs, and projects. It is largely space-flight oriented, but also includes the lines and facilities supporting aeronautical and aerodynamic flight research projects and flight test programs. Nascom interconnects NASA's foreign and domestic tracking and telemetry acquisition sites, launch areas, mission facilities, and control centers. Loss or degradation of these

EXHIBIT 4-4

NASA Staff Elements Responsible for Nascom, TDRSS, and PSCN



OFFICE OF SPACE COMMUNICATIONS



telecommunications lines and facilities could directly affect mission success or safety of life or property.

TDRSS

NASA now has five on-orbit TDRSS satellites in its space network. Three are fully operational and two are partially functional. This constellation of geostationary tracking satellites supports classified and unclassified customers, and it provides almost uninterrupted communications with earth-orbiting space shuttles and other supported customer satellites. TDRSS-1 is located at 275 degrees west longitude; and TDRSS-3, TDRSS-4, TDRSS-5, and TDRSS-6 (launched in January 1993) are located at 171, 41, 174, and 46 degrees west longitude, respectively.

PSCN

NASA's PSCN provides communication services used in the day-to-day intercenter administrative and program support activities. The network interconnects all NASA field installations, major contractor and university sites, and NASA's international partners.

CURRENT/ONGOING NS/EP TELECOMMUNICATIONS ACTIVITIES

NASA continues to be an active participant in White House-approved NCS COP/COR, Vision 21/TQM, and the NSTAC/IES processes, which include collaboration on and support of NS/EP-related NII activities. NASA's NS/EP telecommunications activities during FY94 included:

- ***OMNCS Manpower Support.*** NASA continues to provide personnel resources to the Manager, NCS.
- ***NASA/SHARES Emergency Network.*** NASA continued its participation in the NCS SHARES Program.

- ***NASA Ames Research Center (ARC) Disaster Assistance and Rescue Team (DART).*** NASA's DART continues to be maintained in a state of readiness to respond when requested or needed.

- ***NCS/NASA NS/EP HF Frequency Telecommunications Technical Support Arrangement (TSA).*** NASA's Associate Administrator for Space Communications and the Manager, NCS, consummated this TSA to formalize NASA's support of the NCS NTMS and NTCN programs. These programs will ensure the provisioning of an affordable and survivable telecommunications infrastructure and the diversity of assets to satisfy national leadership requirements over a wide range of likely contingencies.

  NASA's HF stations at NASA ARC, California; NASA Kennedy Space Center, Florida; NASA Lewis Research Center, Ohio; NASA Goddard Space Flight Center, Maryland; and ARC's DART resources form the core assets approved by NASA. All site surveys were completed and accepted by NASA.

- ***NCS ESC Program.*** NASA continues to support the ESC program by allowing NS/EP-related experiments via NASA's ACTS.

  The ACTS was launched in September 1993, and tested with its variety of ground terminals over the remainder of that year. The experiments program began in January 1994 and continues. Currently, there are 78 approved experiments involving 92 investigators, with 39 from industry, 28 from universities, and 25 from Government agencies. The satellite will be fully occupied for its first 2 years of operation.

- ***TSP System Program.*** NASA has completed its transition from the old restoration priority system in 1993 to the new TSP System and continues to use it in support of mission-critical space flight and aeronautical programs.

- ***NASA Emergency Preparedness Program.*** Day-to-day programmatic responsibility for this function resides in NASA Headquarters Office of Safety & Mission Assurance (Code Q). During this period, NASA's Emergency Preparedness Program Manager continues to support and participate in the FEMA-led Catastrophic Disaster Response Group (CDRG) and all planned or simulated exercises.

- ***GETS Program.*** NASA's NCS COP official and Associate Administrator for Office of Space Communications (AA/OSC) approved NASA's GETS usage policy and requirements for GETS PIN cards during Federal NS/EP emergency conditions and/or under contingency conditions that threaten or impact NASA's mission and/or business-critical functions.

- ***Medical Care Via Telecommunications.*** During this fiscal year, NASA's Office of Life and Microgravity Sciences and Applications' Aerospace Medicine Occupational and Health Division (Code UO), continues NASA's pioneering efforts using telecommunications to support humanitarian needs. Medical care via telecommunications is also known as telemedicine.

  NASA's Lewis Research Center (LeRC) in Ohio has developed a satellite-based network for communications between medical centers in America and Russia. This program, called Spacebridge to Moscow, was first initiated in September 1993, and has been successfully demonstrated during 14 clinical sessions covering a variety of clinical specialties. The Spacebridge to Moscow was subsequently formally inaugurated in a ceremony hosted by Senator Jay Rockefeller (D-WV), at the Hart Senate Office Building on November 5, 1993.

  Spacebridge to Moscow was developed as a follow-on to the highly successful Telemedicine Spacebridge to Armenia in 1988/89. NASA's interest in telemedicine dates to the early days

of human space flight when biomedical data from astronauts was telemetered to NASA Mission Control Center in Houston, Texas. NASA continues to utilize its telecommunications expertise in developing telemedicine to understand its potential applications for the delivery of medical care to remote areas, including astronauts and low earth orbiting vehicles.

Today, the NASA LeRC serves as the communications gateway by receiving a signal from the Russian Western Satellite Data Relay Network (WSDRN) or Loutch satellite using a Russian-provided WSRDN ground terminal and relaying this signal to a domestic commercial satellite such as the GTE GStar II. The Loutch satellite is used to support the Russian's Mir space station. It has the capability of audio and full-motion video utilizing its full bandwidth.

NASA LeRC also developed a system for voice communications during the clinical sessions for nonclinical issues. This network, built with a Telos system, is called the engineering channel and serves as a method of communicating between the various U.S. sites and Moscow.

- ***CRIS Initiative.*** NASA's NCS COP concurred with the approval and implementation of the NCS CRIS concept. Accordingly, NASA's telecommunications resources were identified as assets to be included in the overall CRIS Resources Database to be shared on a voluntary, compatible, and cost-reimbursable basis with any Federal agency during either non-Presidentially or Presidentially declared emergencies.

- ***Joint Government and Industry NII Symposium.*** NASA also accepted an invitation to participate in an NII Symposium at the Naval War College in Newport, Rhode Island, October 17-19, 1994. The symposium was jointly approved by the Chairman, NSTAC, and the Director, OSTP.

- ***Information Infrastructure Task Force.*** NASA supported IITF efforts and processes to develop and implement policies to accelerate the design and deployment of the NII/Global Information Infrastructure by providing NASA Headquarters (Codes J, O, R, and U) personnel representation on various interagency steering bodies, committees, and/or subtask working groups such as:

  —President's NSTAC and IES — Code O

  —Policy, Future Commercial Systems and Architecture Subgroups of the NIITF — Code O

  —NCS Vision 21 MFA VI (NII) — Code O

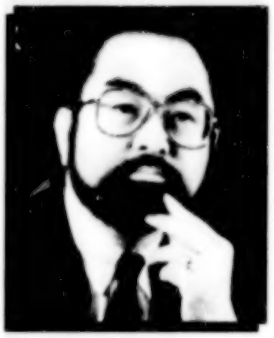
  —FWPC and its Policy, Standards & Requirements, and Privacy and Security Subcommittees — Code O

  —High Probability of Call Completion/ High Performance Computing (HPCC/HPC) Applications Advisory Committee — Code R.

FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)

NS/EP TELECOMMUNICATIONS MISSION

FEMA has extensive responsibilities in managing the civil response to all emergencies affecting the United States. FEMA assists the national emergency management authorities and other key decision makers at the Federal and State levels by providing the information base and communications media to support decision making and response implementation at all levels of Government. FEMA information systems support the performance of the full range of information requirements in every phase and type of mission activity associated with emergency management. Due to FEMA's significant emergency management mission across the broad spectrum of emergencies, its information systems are developed in accordance with the guidelines of NSDD 97 and E.O.'s 12472 and 12656.



Dr. John D. Hwang
Committee of Principals

Mr. Paul B. Maison
Council of Representatives

TELECOMMUNICATIONS STAFF ORGANIZATION

FEMA is restructuring to create the Information Technology Services Directorate to support the all-hazards mission. The Operations Support Directorate (OSD) maintains and operates FEMA's fixed information systems infrastructure and administrative information systems. OSD is also responsible for designing, developing, acquiring, and testing new information systems concepts and capabilities for FEMA. The Response and Recovery (R&R) Directorate manages the mobile elements of FEMA's Emergency Support Capability (FESC), which provides direct support during disaster response operations. The Preparedness, Training and Exercise (PT&E) Directorate provides financial and technical assistance to State and local offices of emergency management for the enhancement of their emergency preparedness telecommunications capabilities. Assistance is provided in the areas of design, development, acquisition, operation, and maintenance of emergency management facilities to ensure reliable, interoperable, and survivable emergency telecommunications capabilities at State and local levels of government.

CURRENT/ONGOING NS/EP TELECOMMUNICATIONS ACTIVITIES

Through a fixed infrastructure and mobile/deployable assets, FEMA's information systems and related activities support the *National Plan for Telecommunications Support in Non-Wartime Emergencies* and the *Federal Response Plan.*

Fixed Infrastructure

The FEMA Switched Network (FSN) is a terrestrial-based voice and data network linking FEMA Headquarters, the National Emergency Training Center (NETC), and the National Emergency Coordination Center (NECC) with the FEMA regional offices, Federal Regional Centers (FRC), the Flood Insurance Administration, and the National Teleregistration Centers. The FSN is engineered to allow extension to any of FEMA's

disaster response/recovery facilities to provide instant 800-service hotline support to remote locations. This 800-service supports remote data entry and processing of disaster assistance applications, as well as other disaster response activities.

The system consists of 14 System 85 PABX's, two Meridian switches, four Number 5 Electronic Switching Systems (ESS), and central offices interconnected with T-1 links to form an Electronic Tandem Network (ETN) that supports the voice and data communications required for emergency and day-to-day use. The network offers ISDN Primary Rate Interface, and allows end-to-end digital data service with automatic route selection and automatic alternate routing. Centralized management of the FSN is conducted from FEMA's National Network Operations Center (NNOC), located at the FEMA Special Facility. The NNOC is also responsible for the deployment of portable PABX's for installation and use at disaster sites.

The FEMA LAN/WAN provides the FEMA user community with a nationwide PC-based network capability for unclassified and classified data communications, processing, and office automation utilizing the FSN backbone. PC-based standard terminals are being integrated into LAN's and interconnected into a FEMA WAN, which provides gateways to FEMA national computers and inter/intraregional connectivity, as well as stand-alone capabilities. All of the hardware and software for the LAN/WAN system have been installed and integrated. The next phase of enhancement, completed in FY94, will provide the States with remote access to the FEMA LAN/WAN system. This was accomplished through the use of network access servers and modems installed in the regions.

FEMA has started a process to reengineer its existing voice and data networks, the FSN and LAN/WAN. A network is envisioned that will support multimedia requirements in an efficient manner and provide an immediate surge capability to handle fast-breaking emergency situations. The intelligent network architecture implemented in FEMA's mobile elements demonstrates these capabilities. FEMA envisions a steadily growing demand for new capabilities as improved assessment and modeling tools continue to evolve. The reengineering effort will take advantage of intelligent network technologies and other WAN extensions and enhancements demonstrated during the Northridge earthquake and southeastern States' floods.

FEMA has upgraded LAN services for its Emergency Information Coordination Center (EICC). The EICC LAN will support the Emergency Support Team (EST) areas used by department and agency personnel fulfilling Emergency Support Function responsibilities under the *Federal Response Plan.* The upgraded LAN is based on the Novell Operating System and a Windows User Interface. The EICC LAN has connectivity to the FEMA WAN, the Internet, and various LAN's supporting FEMA's geographic information systems (GIS).

The FEMA National Radio System (FNAR) is a nationwide HF network that links FEMA Headquarters, the Regions, and State EOC's. The system consists of Harris 10 kW transmitters at the network control station and FEMA regional facilities, and Harris 1 kW transmitters at State and territorial EOC's. The FNARS was designed to coordinate disaster response and recovery activities in the United States and is the primary backup communications system for the *Federal Response Plan*. The FNARS is also used to provide a limited capability backup to the FSN. The FNARS net control maintains a 24-hour watch on two nationwide calling frequencies and maintains a pool of contingency call signs for distribution to other Federal agencies to support emergency operations. The FNARS supports both voice and data and is compliant with Federal Standard 1045 to support ALE. Work is continuing on the development of a prototype Communications Control System (CCS) remote control package. FEMA supports the NCS SHARES program and sponsors State EOC's that want to participate.

The National Emergency Coordination Net (NECN) was developed to provide Federal emergency response personnel with a common HF

radio frequency to exchange information, coordinate activities, and request assistance. Although the NECN is new, the concept is not. Following Hurricane Andrew, many Federal departments and agencies noted that the use of HF radio during the disaster response operation would have been more effective if an NECN-type system had been in place. FEMA notified the Federal community on April 20, 1994, of its intent to initiate the net and invited them to participate. Selected to coincide with the start of hurricane season, the first net was conducted on June 1, 1994. Participation was beyond expectation, with 1,821 stations, representing 31 agencies, checking in during the 24-hour net period. Based on the level of participation and recommendations of participating agencies, the net will be continued on a quarterly basis.

The National Warning System (NAWAS) is a leased, dedicated, nonsecure voice network connected to about 2,300 terminals throughout the United States. It was originally designed to disseminate attack warning messages. Over the years, however, it has been, and continues to be used extensively to furnish information to Federal, State, county, and city officials during natural disasters or severe weather warnings.

The Emergency Broadcast System (EBS) provides the President of the United States with an expeditious method of communicating with the American public in the event of war, threat of war, or grave national crisis. The EBS is also used by Governors during emergencies at the State and local levels for prompt, reliable receipt and release of life and property-saving warning and emergency information. The EBS is composed of more than 14,000 participating radio and television stations and networks, which are linked into a single nationwide network for simultaneous broadcasts.

Development of a Primary Entry Point (PEP) system, which consists of 30 broadcast stations located across CONUS, and one each in Alaska, Saipan, Puerto Rico, and St. Thomas, U.S. Virgin Islands, was completed this year. The PEP system will replace the Last Resort System, which used major switching points that were located in high risk areas. Protection of additional PEP stations in American Samoa, Hawaii, and Guam is pending. Installation of the PEP system is planned for FY95.

FEMA is establishing an agencywide Internet access capability. The Internet will significantly increase FEMA's capability to exchange disaster information with other Federal departments and agencies, State and local governments, educational and private institutions, and the general public. To achieve the desired connectivity, FEMA will implement both a Private Domain Server (PvDS) and a Public Domain Server (PDS). FEMA has already implemented the PvDS through a local Internet service provider using a T1 access with "Firewall" protection for internal FEMA networks.

Networks are being brought on-line in a phased manner as the approved naming and addressing conventions are implemented. Authorized remote stand-alone FEMA users can also access Internet via modem through an access server located at the service provider. Basic Internet services available on the FEMA servers include Telnet, File Transfer Protocol (FTP [including Archie Services]), E-Mail (PvDS only), Gopher Services, and World Wide Web Services. FEMA is using FTP Software Windows FTP suite and National Center for Super Computing Applications (NSCA) MOSAIC for Windows for the PC workstation configurations. FEMA expects to complete an agencywide implementation of the PvDS and PDS during 1995.

Prior to the Northridge earthquake, limited Internet access was available to selected components within the FEMA headquarters on a dial-up basis. The Northridge earthquake provided the stimulus to establish a prototype Internet T1 access for the exchange of large data files, particularly those used by various GIS's. Internet also provided a means for the exchange of earthquake scientific and technical data among various Federal, State, and educational entities. Following the Northridge earthquake, FEMA implemented a T1-based WAN using current intelligent network devices to achieve multimedia capabilities (voice, data, and video) connecting the California Disaster Field Office, FEMA Region 9, the California Office of

Emergency Services (EOS) Emergency Operations Center (EOC), and the FEMA headquarters. The networks demonstrated that intelligent network devices (1) reduce the cost of T1 circuits by effectively utilizing available bandwidth; and (2) provide a critical surge capability by allowing an eightfold increase in voice capacity via compression techniques.

The Internet was used extensively to transmit satellite flood coverage information to FEMA for use by the Operations Support Directorate's GIS Support Team. A good portion of the information moved included flood coverage files generated from TYROS satellite imagery source data. This information was collected, processed, and then transmitted via the Internet to FEMA headquarters for further processing and analysis, and for the preparation of plots.

FEMA implemented a Global Position System-based collection methodology during 1993 and used it during the southeastern States' flood. Critical damage assessment information was collected by field damage assessment teams using computer equipment to record damage information geo-referenced to Global Position System-derived coordinates. The geo-referenced information included textual database entries as well as digital images of the damage, with much of the data being processed on GIS systems located in the Washington, D.C., area. A wide bandwidth pipe to the FEMA headquarters is required because of the size of the geo-reference information and imagery collected. Alternatives for this requirement are being considered and include use of the Internet or extension of FEMA WAN capabilities.

The FEMA National Automated Message System (FNAMS) is the Agency's message system linking the Federal Government with State EOC's. The system provides FEMA with an infrastructure message service that includes the capability to transmit a single message to multiple subscribers simultaneously. User interface was enhanced by upgrading all terminals to PCS and incorporating new software.

The FEMA Facsimile and Record System (FFARS) is a high-speed, secure PC-based, facsimile transmitter/receiver telecommunications workstation. The system transmits and receives classified record message traffic among FEMA and other Federal departments and agencies using dial-up telephone lines secured with KG84 COMSEC equipment. It processes photographic images, drawings, special document formats, and narrative text.

The FEMA Secure Voice Program provides secure telephone service among FEMA locations and State and territorial EOC's. FEMA has installed 2,187 STU-III's in locations at FEMA headquarters; the Special Facility; the Federal Support Center, Olney, Maryland; all FEMA regions; the National Warning Center; State EOC's; FEMA's Caribbean office in Puerto Rico; FEMA's office in Hawaii; and FEMA contractors.

FEMA's Emergency Education Network (EENET) is a one-way video, two-way audio, satellite-distributed, point-to-multipoint national videoconferencing network operated from FEMA's NETC. The network provides regularly scheduled emergency training and education to Federal, State, and local emergency managers, and to thousands of local public and private facilities.

The FEMA Frequency Management System (FFMS) is an automated system that improves management of FEMA radio frequency assignments and operations. Its features include an emphasis on user friendliness and sophisticated frequency engineering modeling programs. The ongoing enhancement of the FFMS will bring into use powerful interference analysis programs integrated with video and digital mapping capabilities, making it possible to conduct large-scale mobile emergency operations and exercises without disrupting normal radio frequency systems. The FFMS will be fully integrated with automated frequency management improvements as they are planned and implemented by the Federal departments and agencies participating in the Interdepartment Radio Advisory Committee (IRAC).

FEMA's Frequency Management Office coordinated long-range HF, land-mobile VHF, microwave and satellite authorizations on an expedited basis for the Midwest floods, the

California fires, the Northridge earthquake, the Southeast floods, and the Northwest wildland fires for FEMA and other Federal radio communications units supporting disaster operations in those areas. Several nuclear power plant and other exercises were also supported.

FEMA is the Federal sponsor for State and local government agencies desiring to participate in the TSP System. Activities include representing FEMA at the TSP Oversight Committee meetings and providing information to State and local agencies.

Mobile/Deployable Assets

The Federal Emergency Support Capability (FESC) is the mobile operations and communications capability that keeps emergency management information flowing when a Federal response is required in any disaster or emergency. The FESC supports Federal, State, and local response efforts by providing communications and information on the scene of a disaster, and is a link to the FEMA infrastructure. The FESC consists of the Mobile Emergency Response Support (MERS) detachments, the Mobile Air Transportable Telecommunications System (MATTS), the Information Display System (IDS), and the portable PABX systems from the NNOC. FESC resources may be deployed as a complete package or as standalone systems.

The MERS capability is the mobile extension of the fixed FSN and is provided by five MERS detachments located in Bothell, Washington (BT); Denton, Texas (DT); Denver, Colorado (DV); Thomasville, Georgia (TV); and Maynard, Massachusetts (MA). Each MERS detachment has a transportable disaster communications system composed of modular elements that can provide a DFO, DAC, or other disaster response/recovery facility with voice, facsimile, message, and data communications over a variety of media in both secure and nonsecure modes. MERS elements are air transportable by C-5A aircraft.

The MERS communications systems include digital PABX message switches to interface with both secure and nonsecure message networks; HF, VHF, and UHF radios; LOS microwave radio transmission systems; Ku-band satellite communications systems; and self-contained power generation and distribution systems. MERS switch capabilities have been enhanced with the addition of both MERLIN LEGEND and REDCOM PABX's, which will provide smaller, lighter, and more portable systems. Additionally, each MERS detachment has an IDNX, which will allow use of intelligent network devices, LAN/WAN router interfaces, voice compression, and videoconferencing from a disaster site.

The Multi-Radio Van (MRV) contains a cross-section of all systems in a single, self-contained vehicle. The MRV can provide a communications interface to the FSN from a remote disaster site via the Ku-band satellite system using industry-standard T1 transmission facilities and an analog video broadcast capability comparable with the broadcast industry.

In support of the Northridge earthquake disaster response, initial elements of the MERS-DV Detachment arrived at the DFO on January 18, 1994, with additional equipment and personnel arriving on January 21, 1994. The MERS-DV MRV provided communications while other MERS-DV personnel installed telephone wiring and provided support service to the overall DFO telephone system. Within a short time, MERS-DV had 38 personnel and 20 vehicles providing communications, power, telephone, ADP equipment, and other life support equipment. MERS-DV provided support at one DFO, six DAC's, three food stamp distribution centers, and a Federal Mobilization Center.

Personnel and equipment from MERS-DT and MERS-BT also arrived on January 21. MERS-DT deployed to the Simi Valley DAC with 30 personnel, the MRV, two LOS microwave radio units, a MERLIN switch, a power generator, and a cargo vehicle. MERS-DT provided support to one DFO, four DAC's, a central processing center (CPC), and the National Teleregistration Center at Denton, Texas.

MERS-BT arrived at the disaster scene with 29 personnel and 10 vehicles and deployed to North

Hollywood, California. MERS-BT provided support to a DFO, four DAC's, a food stamp distribution center, and a CPC.

On January 20, 1994, MERS-MA was airlifted to March AFB, California. They deployed with the MRV and three support vehicles. They eventually deployed up to 24 personnel to meet mission requirements. MERS-MA supported one DFO, a DAC, and a CPC.

MERS-TV deployed personnel for logistics, operations, and ADP support. MERS personnel ensured that mobile communications and power generation assets were available to the Federal Coordinating Official (FCO) within approximately 36 hours of the earthquake. Deployed personnel and equipment were instrumental in the successful setup and operation of communications and information processing support for the Agency's response activities.

MERS units also provided contingency communications support to State and local emergency responders during the 1994 World Cup Soccer Games. MERS-BT deployed its MRV to Pasadena, California; MERS-DV deployed its MRV to Chicago, Illinois; and MERS-MA provided radio support in Boston, Massachusetts. This support commenced on May 15 and concluded on July 20, 1994.

On July 7, 1994, personnel and equipment from the MERS-TV detachment deployed to Geneva and Elba, Alabama, to support activities resulting from Tropical Storm Alberto. In addition, personnel and equipment were dispatched to Atlanta, Georgia, to support the initial installation of telephone and information processing systems in the DFO, located at the Atlanta Hartsfield International Airport. On July 10, 1994, MERS-TV personnel completed initial installation of 213 LAN stations.

On July 11, 1994, MERS-TV commenced the daily analog video broadcast of a press conference from the Atlanta DFO, using its MRV and deployable studio equipment. Commencing July 14, 1994, MERS-TV provided UHF SATCOM support to the Defense Coordinating Officer at the request of the FCO. On July 21, 1994, MERS-TV personnel redeployed to Albany, Georgia, to support the establishment of the satellite DFO.

On July 22, 1994, MERS-BT and MERS-MA deployed two personnel each with INMARSAT terminals to Hawaii at the request of the Pacific Area Office of Region IX in anticipation of Hurricane Emilia.

On July 29, 1994, MERS-BT deployed the MRV, fuel tanker, trailer, 15-passenger van, a Merlin switch, and nine personnel to provide communications in support of fire suppression operations in the Tyee-Entiat area of the Wenatchee National Forest in Washington State.

The MATTS is an air mobile system designed to provide communications for any emergency requirement. MATTS communications capabilities include voice and data via landline, HF/VHF/UHF radio, and a variety of satellite systems in the secure and nonsecure modes. An integral part of MATTS is the telephone switchboard, which is capable of providing 48 trunks and a T1 link to 88 subscribers. MATTS can also provide nonsecure voice, data, and video communications when used in conjunction with its T1 via a Ku-satellite link. MATTS is self-contained, provides its own power source, and is air transportable on either C-130 or C-141 aircraft.

The MATTS arrived at March AFB, California, on January 22, 1994, via two U.S. Air Force C-141's. They arrived with 10 personnel, the mobile Ku-band truck (MKT), the communications van, and three support vehicles. The MATTS provided support to a DAC.

The IDS accesses and displays information that is critical to emergency management officials. Information is provided in three forms: graphics, digital mapping, and still image video. The system consists of PC workstations interconnected via a LAN, video projectors, and a sound system. The PC workstations can use off-the-shelf or custom-designed software applications to produce briefings, reports, or action-tracking products, or can receive data from outside resources via modems. The system can be deployed as a stand-alone unit or in conjunction with the MATTS or MERS elements.

FEMA has established an operational television unit that can produce broadcast quality programs for release to cable and other outlets for their use or rebroadcast to the general public. This initiative is a follow-on to the activities started by the Recovery Channel during the Midwest flood response and recovery efforts.

FEMA effectively utilized satellite television uplinks to proactively communicate emergency management information to on-air television stations, cable TV systems' network news departments, and Federal, State, and local agencies with satellite receive capabilities. FEMA began its television operations in early 1993, providing "one-on-one" live interviews by satellite with TV stations around the country. As flooding increased in the Midwest, FEMA began several hours of daily, live Federal agency news briefings, updates, and interviews.

When southern California was struck by the Northridge earthquake, FEMA began unprecedented 7-day-a-week, 24-hour-a-day broadcasting via C-band and Ku satellites. Aimed at both cable TV systems and off-air broadcasters, the Recovery Channel was carried live on over 125 southern California cable systems with a potential viewing audience of 4.5 million people. Local and network TV news operations came to rely on the Recovery Channel, frequently recording information and newsfeeds for inclusion in regular broadcast coverage of earthquake response and recovery operations.

When Tropical Storm Alberto dropped devastating amounts of rain on Georgia, Alabama, and Florida, FEMA began three-State televised news briefings (Georgia and Alabama from the Atlanta DFO, and Florida from the State EOC in Tallahassee) on a daily basis. Television stations in the Southeast, public networks, and local TV news operations elsewhere in the country monitored the daily feeds and utilized portions of the briefings in regular and special coverage.

FEMA's use of the National Airborne Operations Center (NAOC) was achieved on July 21, 1994, when an MOA between FEMA and the JCS was signed that allowed for immediate FEMA use of the NAOC Boeing 747 aircraft in the event of a catastrophic domestic disaster. The NAOC will be used primarily for FEMA and other Federal personnel of the ERT that will initially coordinate the Federal response to the disaster.

The Director of FEMA will determine when the NAOC is to be deployed for disaster response operations. The decision will be based on the extent of the damage and the time frame for alternative resources to be made available. The NAOC will become a critical link in those first few hours or days until a more permanent base of operations, supported by MATTS and MERS elements, can be established in a major disaster area where damaged or destroyed communication facilities are inoperable.

The NAOC Boeing 747 provides computers, telephones, display areas, conference rooms, sleeping quarters, food, and security for 40 people for 48 hours, and possibly longer if needed. FEMA and JCS communication specialists would use the NAOC to access the commercial PSN, the DSN, and/or the FSN, to establish communications with State and local officials.

In the unlikely event that the PSN, DSN, and FSN are all inaccessible and/or inoperable, FEMA would use the NAOC to establish and maintain HF radio communications through the FNARS. Standard operating procedures must still be refined and joint FEMA/JCS exercises must take place to ensure that deployments run smoothly in an actual FEMA NAOC deployment. Standard operating procedures have been written and one voice test alert has been completed. To test these procedures, exercises aboard the NAOC Boeing 747 aircraft will be held in the coming months. The NAOC may be used, for example, as part of FEMA's Response '95 exercise in May 1995.

Coincidentally, FEMA alerted the DoD on July 21, 1994, that it might be necessary to deploy the NAOC in response to Hurricane Emelia if the storm struck Hawaii. Because the hurricane subsided, it was unnecessary to deploy the NAOC.

Pending Issues

As older telecommunications technologies become obsolete, efforts to modernize complex information systems and telecommunications networks must continue in light of the increasing need for such services. Other issues FEMA continues to address are how NS/EP telecommunications will fit into the NII and how to improve information systems support to disaster response/recovery operations.

FEDERAL COMMUNICATIONS COMMISSION (FCC)

NS/EP TELECOMMUNICATIONS MISSION

The FCC, consistent with Section 4(c) of E.O. 12472, performs the following NS/EP functions:

- Reviews the policies, plans, and procedures of all entities licensed or regulated by the FCC that provide NS/EP communication services, to ensure their consistency with public interest, convenience, and necessity

- Develops policy, plans, and procedures to execute the responsibilities assigned in E.O. 12472 under all conditions of a crisis or emergency

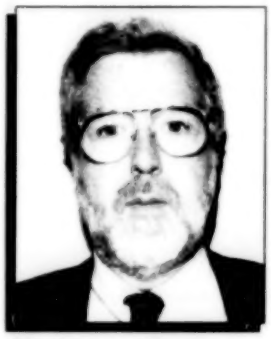
- Consults, as appropriate, with the Executive Agent, NCS, and the NCS COP/COR to ensure continued coordination of NS/EP activities.

SIGNIFICANT ACCOMPLISHMENTS

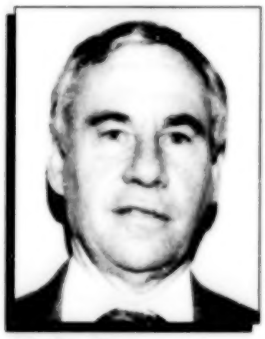
The FCC realized the following achievements:

- Cooperated with the NCS in carrying out shared responsibilities under the TSP Program. A Commission staff member is assigned to the NCC on a part-time basis. This liaison officer contributed to improvements in the TSP database and the TSP report generation system.

- Worked with its industry advisory committee, the NRC, to improve the reliability of the Nation's telecommunications. On July 14, 1994, the FCC adopted recommendations of the NRC concerning service disruptions. Carriers will be required to report to the FCC service disruptions of 30 minutes or more involving 30,000 or more potential customers. Carriers are also required to do a root cause analysis of these outages.



MR. ARLAN VAN DOORN
Committee of Principals



MR. ROY KOLLY
Council of Representatives

- Provided current copies of common carrier outage reports to the NCS through the FCC liaison officer. Because the major common carriers also have representatives on site, the NCC has served as a useful focal point for cooperation and information exchange. The FCC continues to monitor network outages and to take steps to reduce their occurrence.

- Participated in meetings and activities of the Toll Fraud Prevention Committee, a committee under the Network Operations Forum. On December 2, 1993, the FCC released a *Notice of Proposed Rule Making* on policies and rules on toll fraud (Docket CC 93-292).

- Reviewed one new and five revised State EBS plans and several local plans. Received over 2,000 EBS activation reports. Completed two national EBS closed-circuit tests originated by WHCA.

- Developed a draft report and order for a new EBS.
- Advised and assisted in the continuing development of the PEP Project and the Emergency Action Notification (EAN) network.
- Made internal FCC changes to better integrate the FCC's NS/EP activities into its field structure.

CURRENT/ONGOING NS/EP TELECOMMUNICATIONS ACTIVITIES

As Defense Commissioner of the FCC, Andrew C. Barrett provides overall direction and guidance for the Commission's NS/EP activities. He keeps the chairperson and other commissioners abreast of any emergency matters requiring attention, and represents the FCC in the deliberations of the JTRB.

In accordance with the mandate of E.O. 12472, the FCC continues its NCS role as a liaison member; regulatory and adjudicatory functions do not permit the FCC to act as a regular voting member. FCC representatives participate in meetings of the NCS COP/COR. An FCC liaison officer is assigned on a part-time basis to the NCC to facilitate the exchange of information during crises and emergencies, and to ensure expedited action by the Commission on requests for emergency authorizations or waivers of the rules. This liaison also provides status information on various FCC activities and explains FCC procedures at industry-government meetings.

In addition, the FCC is represented at meetings of the NSTAC and the NSTISSC. The FCC also provides a liaison to Ad Hoc 134 of the IRAC; continues to participate in the activities of the NTMS, SHARES, the NSIE, and the Government Network Security Subgroup (GNSS); and participates in all meetings of the Subcommittee on Federal Earthquake Response Planning, providing assistance to various FEMA regions as needed. Work continues on implementing the EBS PEP Project, upgrading the EAN network, and updating all State and local EBS plans.

Within the FCC, efforts continue to sensitize bureaus and offices to the NS/EP telecommunications consequences of regulatory activities. Each bureau or office must develop an impact statement describing the effect of proposed actions on NS/EP. The NS/EP impact is considered by the commissioners in deliberations along with legal, regulatory, economic, technical, and administrative factors.

PENDING ISSUES

During FY95, the FCC will perform the following:

- Continue to work with the NCS to improve the effectiveness of the TSP Program
- Continue to monitor the hacker threat to the PSN through participation in the GNSS
- Continue to participate in the Toll Fraud Prevention Committee of the Network Operations Forum (NOF)
- Continue to monitor network outages and take steps to reduce occurrences
- Continue to advise/assist in development of the PEP Project and the EAN network
- Implement the new EBS upon Commission approval.

NUCLEAR REGULATORY COMMISSION (NRC)

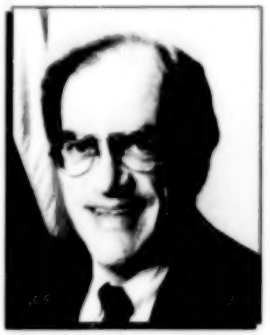
NS/EP TELECOMMUNICATIONS MISSION

The mission of the NRC is to ensure that nonmilitary uses of nuclear materials in the United States, including the operation of nuclear power plants and medical, industrial, or research applications, are carried out with proper regard for the protection of public health and safety, the environment, and national security. NRC accomplishes these objectives through the licensing of nuclear reactor operations and other possession and use of nuclear materials, including the transportation and disposal of nuclear materials and wastes; the safeguarding of nuclear materials and facilities from theft, damage, and sabotage; and inspection and enforcement activities.

The NRC's NS/EP telecommunications provide assured and reliable connectivity between the NRC Operations Center (NRCOC), operating nuclear power plant control rooms, and regional incident response centers. This connectivity ensures immediate notification to the NRCOC of unusual occurrences and provides relevant information during events at nuclear facilities.

TELECOMMUNICATIONS STAFF ORGANIZATION

The functional responsibility for telecommunications management within the NRC is assigned to the Director, Office of IRM. This office is responsible for providing Agency policy and guidance; developing long-range plans; provisioning multimedia telecommunications services within the headquarters, four regional offices, and fueled commercial nuclear power plants; and reviewing and evaluating telecommunications plans and services for the Agency.



Mr. Gerald F. Cranford
Committee of Principals

Ms. Pamela G. Kruzik
Council of Representatives

The Director, IRM, represents the NRC on the NCS COP. The Director, Technology Assessment Staff, represents the NRC on the NCS COR.

SIGNIFICANT ACCOMPLISHMENTS

The NRCOC was relocated from Bethesda, Maryland, to the consolidated NRC facilities in Rockville, Maryland. As part of this relocation, capabilities were modernized with installation of a new telephone PBX, teleconference bridge, operator consoles and recording equipment, and a new LAN that includes servers and computer terminals. Physically diverse telecommunications facilities were also provided to the center to enhance emergency preparedness.

Other accomplishments include:

- High-speed circuits supporting the Agency's WAN were assigned restoration priorities under the TSP Program.
- Critical nuclear power plant FTS2000 circuits have been assigned TSP.
- Local management devices with key processors (LMD/KP) for use in COMSEC accounting, and

key generation and DTD's for storage and installation of the keys generated by the LMD/KP have been ordered in support of the Agency's AUTODIN facility.

CURRENT/ONGOING NS/EP TELECOMMUNICATIONS ACTIVITIES

FTS2000 service (seven lines to each nuclear power plant and associated emergency operations facilities) continues to provide reliable service to all nuclear power plants.

As a backup to the FTS2000 service, the NRC evaluated HF and satellite (INMARSAT) for NRC emergency response functions and concluded that INMARSAT met NRC emergency backup requirements. NRC has acquired four additional INMARSAT terminals for enhancing its emergency communications response capability.

The NRC continues to investigate backup telecommunications alternatives to ensure uninterrupted telecommunications service to commercial nuclear power plants.

UNITED STATES POSTAL SERVICE (USPS)

NS/EP TELECOMMUNICATIONS MISSION

The Postal Service has not been assigned any specific NS/EP telecommunications responsibilities in the event of a national emergency or other declared disaster. Therefore, the USPS telecommunication systems and services are designed to support day-to-day organizational, administrative and operational mission requirements; telecommunications facilities dedicated specifically to NS/EP are limited in scope.

MR. TIMOTHY J. PATTERSON
Committee of Principals
Council of Representatives

SIGNIFICANT ACCOMPLISHMENTS

The following accomplishments will enhance the ability of USPS to support the overall NS/EP mission:

- Converted more than 400 USPS major field locations to FTS2000 (Network A) service. The majority of these implementations included Switched Digital Integrated Service (SDI), Switched Voice Service, Dedicated Transmission Service (DTS), and Virtual On-Net services. The Postal Service is a voluntary user of FTS2000 services, and implements services when a business case supports this connectivity. The use of FTS2000 services, where cost-effective, has saved about $400,000 per month over previous services. Additional implementations during FY95 will be based on business need.

- Implemented a private frame relay backbone at 15 network strategic locations during FY94, using Network Equipment Technologies (NET), Frame Relay Exchange (FRX) technology housed in IDNX T1 multiplexers.

- Established an ordering agreement for assignment of a single Primary Interexchange Carrier (PIC) for national and international long distance service. Competitive award to Sprint includes use of FONCARDs (Sprint proprietary telephone credit cards) for traveling executives. This cost-effective, standardized long distance service was implemented at over 12,000 USPS field locations, with over 10,000 FONCARDs issued. The service available through the PIC contract includes audio conference calling and International Direct Distance Dialing (IDDD) service features.

- Established standard telephone system contracts with WilTel Communications Systems (Northern Telecom systems/equipment) and Government Telecommunications, Inc. (AT&T systems/equipment). USPS awarded contracts for more than 80 Northern Telecom Meridian 1 Electronic Digital Private Branch Exchange (EDPBX) systems and more than 1,100 AT&T Partner series Electronic Key Telephone Systems (EKTS) and Legend systems. Each system award is based on competition with the serving local exchange carrier for central

office-based telephone service, using a detailed systems life cost model. The standardization of systems and equipment, and the streamlined approach to the two-step competitive phase are expected to save more than $10 million over the life of the contract.

- The Postal Service implemented Wellfleet multiprotocol routers and management systems at over 350 field locations nationally during FY94. The implemented network follows a three-tier, hierarchical architecture that supports all current wide area network protocols and provides a robust standardized interconnection utility for local area network communications requirements. It is anticipated that an additional 100 locations will be implemented during FY95. Backbone bandwidth will be augmented during this time to increase network performance and improve network survivability in the event of critical element failure.

- Following competitive contract award for local area network components to I-NET (providing Synoptics equipment), successful LAN implementations occurred at over 200 field management locations during FY94, with an expected 100 additional implementations expected in FY95. All awarded equipment is IEEE 802.3/10BaseT compliant, supporting 10 Mbps Ethernet using unshielded twisted pair (UTP) transmission medium. Options include Ethernet-switching and ATM backbone architectures.

- Adopted a structured wiring standard for implementation in all new and renovated USPS facilities. The Universal Wiring Standard (UWS) provides a holistic approach to all cabling infrastructures within a facility. This wiring methodology includes telephone system, data terminal, video surveillance, sensors, heating, ventilation, air conditioning, and lighting control. The concept has proven successful in reducing costs of moves, adds, changes, and disconnects of services over the life of the cable plant. The UWS standard includes the use of Category 5 cabling and fiber optic components to support future implementation of a standards-based 100 Mbps transmission speed for local area network connectivity.

- Implemented more than 80 standardized video conference locations. This tool has improved communications and planning functions while reducing costs and time lost due to travel. An additional 20 video conference implementations are expected during FY95.

- Implemented a corporate electronic mail standard and provided Internet connectivity using firewall technology.

- Adopted a standardized technical architecture that defines the evolving computing and telecommunications infrastructure required in year 2000 and beyond. This architecture follows a utility company model to focus on the infrastructure required to deliver a standard service suite to all users located in field facilities.

- Completed tests of various wireless voice and data architectures and equipment. More tests are scheduled in FY95. The Postal Service is planning several applications, including location and monitoring services (LMS), that will use the benefits of present and future commercial wireless technology.

- Implemented an additional 22 remote bar code sorting (RBCS) systems at large mail processing plants during FY94, for a total of 47 implemented locations. Each RBCS plant location uses multiple T1 circuit paths to provide high speed data transmission of letter mail images for bar coding purposes. Implementation at these locations were in support of the Mail Processing Automation Program. An additional 40 RBCS plant implementations are scheduled for FY95.

- Significant tests were undertaken in FY94 to apply business mail reply card scanning technology and high speed data transmission as a potential future mail classification. Additional tests will be conducted during FY95.

FEDERAL RESERVE BOARD (FRB)

NS/EP TELECOMMUNICATIONS MISSION

The FRB does not have telecommunications assets listed as NCS primary assets because the significant telecommunications assets of the Federal Reserve are owned or leased by the Federal Reserve Banks, not by the FRB. The FRB's NS/EP responsibilities relate to the "maintenance of national economic posture," and, in particular, the "maintenance of national monetary, credit, and financial systems."

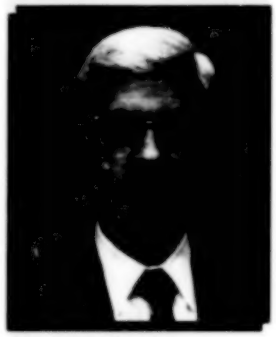
TELECOMMUNICATIONS STAFF ORGANIZATION

The Assistant Director for Information Technology and Building Programs in the Board's Division of Reserve Bank Operations and Payment Systems has responsibility for oversight of the Reserve Banks' telecommunications services and serves as a liaison member on the NCS COP. The Manager of the Information Technology Section of the Division of the Reserve Bank Operations and Payment Systems serves as a liaison member on the NCS COR and the alternate member on the NCS COP.

The Director, Division of Information Resources Management, has responsibility for planning the Board's telecommunications services. The Director, Division of Support Services, has responsibility for the ongoing operations of the Board's telecommunications services.

SIGNIFICANT ACCOMPLISHMENTS

The FRB focused its NS/EP activities on its sponsorship role for assigning TSP status, primarily at a restoration priority level of four, to essential telecommunications services under the criteria it adopted in 1993. There were approximately 530 active TSP assignments sponsored by the FRB at the end of the fiscal year, with approximately 193 TSP assignments made during the year.



Mr. John Parrish
Committee of Principals

Mr. Kenneth Buckley
Council of Representatives

- The FRB continued to sponsor, for TSP assignment, circuits used for the Fedwire funds transfer and securities transfer services.
- The FRB is sponsoring for TSP assignment, circuits used by other payment systems that meet the FRB's eligibility criteria.
- The FRB is sponsoring, for TSP assignment, those circuits used by the Federal Reserve Bank of New York's open market operations, foreign operations, and circuits used to connect large competitive bidders to the U.S. Treasury Automated Auction Processing System.

In addition, the FRB developed software that is in use by service users to automate the TSP application process. The FRB is submitting TSP applications to the OMNCS in automated form.

CURRENT/ONGOING NS/EP TELECOMMUNICATIONS ACTIVITIES

The FRB will continue its activities to facilitate TSP assignments for essential telecommunications

services that support large-value payment systems, the Federal Reserve's open market operations, foreign operations, and the Automated Auction Processing System for U.S. Treasury securities. The FRB continues to support other NCS initiatives that improve the resiliency of essential telecommunications services necessary to maintain the Nation's financial systems.

NATIONAL SECURITY AGENCY (NSA)

NS/EP TELECOMMUNICATIONS MISSION

NSA has an operational mission to support the critical intelligence needs of the DoD and national security community, and a support mission to provide the technical support necessary to develop and maintain adequate plans for the security and protection of NS/EP telecommunications.

TELECOMMUNICATIONS STAFF ORGANIZATION

Within NSA, support to NS/EP-related activities is split between two organizations. The Telecommunications Organization is responsible for the planning and operation of the telecommunications systems and networks linking Agency elements worldwide and providing agency connectivity to other Government services. The Information System Security Organization is responsible for developing information security (INFOSEC) products and services to enhance the security of telecommunications systems. Both organizations work in close collaboration with the military services and defense agencies in support of overall DoD initiatives. INFOSEC products and services are also applicable across the Government for the protection of classified and sensitive national security information.

CURRENT/ONGOING NS/EP TELECOMMUNICATIONS ACTIVITIES

While a large part of NSA's NS/EP support activities are inherently covered in the DoD section of this report, one effort of potentially broad application in the NS/EP community is the Multilevel Information System Security Initiative (MISSI).

The purpose of MISSI is to make available a set of products that can be used to construct secure computer networks in support of a wide variety of missions. NSA's approach is to work closely with customers to completely understand their present and future needs. As a result, the technological underpinnings of MISSI are driven by information management approaches and existing constraints rather than by independent security solutions.

MR. DAVID L. AUSTIN
Committee of Principals

MR. EARL R. HOUCK
Council of Representatives
PICTURE NOT AVAILABLE

MISSI products collectively provide:

- Writer-to-reader information security services, including data integrity, access control, authentication, nonrepudiation, and confidentiality
- Support for applications, such as E-Mail, file transfer, remote login, and database management
- Compatibility with commercial computing and networking technology
- Protection against unauthorized disclosure or modification of information while enabling the integration of systems containing different sensitivity levels.

MISSI products are based on the following considerations:

- ***Evolution:*** MISSI products are being delivered as they become available, beginning in 1994. Each new release of MISSI products will address the system security objectives of improved performance levels and progressively higher security assurance.

- ***Affordability:*** In sufficiently large quantities, MISSI products are cost competitive with similar commercial hardware and software products.

- ***Performance:*** MISSI products are designed to work effectively on both existing computer equipment and anticipated future equipment. MISSI performance, however, will be enhanced when used on newer generation computer systems with improved technologies.

Release one of MISSI, called MOSAIC, is of particular interest and application to the NS/EP community. MOSAIC provides security service capabilities applicable to Sensitive but Unclassified data. Specifically, MOSAIC provides:

- Protection for Sensitive but Unclassified data when used on a COTS workstation in LAN/WAN environments

- Access control, authentication, confidentiality, data integrity, and nonrepudiation services

- Support for various workstation operating systems, DOS and UNIX at a minimum.

MISSI E-Mail users will also be provided network security management (NSM) capabilities through a local authority workstation (LAW). The LAW, a workstation with special purpose applications software, provides essential cryptographic security management functions, including managing cryptographic keys, access control permissions, and digital signature.

The PCMCIA card will be the primary user interface for MISSI. This card is a credit card-size device which, when used with a personal identification number, will authenticate a user's identity and access privileges. The card used with MOSAIC is called FORTEZZA.

There are several active beta tests of MOSAIC underway. NSA is actively participating in the NCS E-Mail testbed and has provided several FORTEZZA cards for use by testbed participants. MOSAIC has great potential for protecting NS/EP-related communications over the Internet and other common user networks. It may also be useful in providing an easily adaptable network management function to control access to such services as GETS.

NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION (NTIA)

NTIA's FY94 activities have been incorporated in the DOC report.

MR. RICHARD D. PARLOW
Committee of Principals

MR. WILLIAM BELOTE
Council of Representatives

V. NS/EP TELECOMMUNICATIONS ISSUES

PUBLIC SWITCHED NETWORK SECURITY

Issue

Network security is of paramount importance to the NS/EP telecommunications industry and to the success of the NII initiative. Electronic attacks carried out against the Internet during FY94 — the "Sniffer" attacks — have increased concerns about the security of communication networks in the United States. The vulnerability of the PSN to unauthorized software manipulation by electronic intrusion and other means presents a formidable threat to the security of information within the network.

Background

In FY90, the Chair of the National Security Council's Policy Coordinating Committee for National Security Telecommunications and Information Systems, tasked the Manager, NCS, to determine what action was needed from the telecommunications industry and Government to ensure the availability of critical NS/EP telecommunications services considering the "hacker" threat to the PSN.

During FY91, the NSTAC Network Security Task Force (NSTF) and the Government Network Security Subgroup (GNSS) worked together to define and address network security issues. Their combined efforts resulted in the establishment of the NSTAC and Government NSIE groups.

In FY92, the NSTAC IES established the NSSOG to identify security standards issues that needed to be addressed, promote the development of standards responsive to the identified needs, and encourage acceptance of security standards within the industry.

At the 15th meeting of the President's NSTAC, held in May 1993, NSTAC approved an NSIE recommendation to the President to correct the legislative deficiencies affecting the capability of law enforcement organizations to prosecute and convict computer criminals who target the telecommunications infrastructure. The recommendation was included in the NSTAC Chair's report to the President.

Status

On December 23, 1993, the Manager, NCS, submitted the third *Status Report on Network Security* to the Assistant to the President for National Security Affairs. The status report contained an updated assessment of the risk to the PSN from computer intruders. The risk assessment concluded that the risk to the PSN from computer intruders remained a serious concern.

During FY94, the NSIE groups sponsored a Network Security Symposium to share information regarding security with industry and Government organizations not represented on the NSIE groups. The NSIE groups also conducted a workshop on firewalls to protect network elements connected to the Internet. The NSSOG prepared a report on network security issues for which standards are needed. The report will be presented during the January 1995 meeting of the President's NSTAC.

The Manager, NCS, approved a plan under which DISA and the OMNCS can work with other Government organizations to improve the security of sensitive but unclassified information throughout the Government. The plan is intended to promote compatible security solutions and reduce the cost of security to the Government.

The OMNCS continues to support the security process by sponsoring studies and research efforts intended to improve the security of the Nation's telecommunications infrastructure.

Because network security is paramount to NS/EP telecommunications and to the success of the NII initiative, industry and Government will continue to place a high priority on developing and implementing network security solutions to reduce security risks and mitigate security threats.

NATIONAL INFORMATION INFRASTRUCTURE

Issue

The NII is a seamless network consisting of a communications infrastructure, computers, databases, and consumer electronics that together will provide vast amounts of information to users regardless of location, profession, or information requirements. NS/EP requirements must be incorporated into NII policies and applications to ensure that NS/EP users can respond to the entire spectrum of national emergencies. As the NII evolves, it is imperative that industries developing NII services and Government organizations developing the NII prototypes understand the importance of incorporating NS/EP requirements into the NII design.

Background

The Clinton Administration's September 15, 1993, report, *The National Information Infrastructure: An Agenda for Action,* officially launched the IITF to work with Congress and the private sector to reach consensus on and implement policy changes needed to accelerate the deployment of the NII. The IITF is chaired by Secretary of Commerce Ronald H. Brown and its members include representatives from major Federal organizations. Also on September 15, 1993, President Clinton signed E.O. 12864, which created the U.S. Advisory Council on the NII and charged it to facilitate private sector input to the IITF.

The *Agenda for Action* describes the goals of the NII and specifically tasks the NSTAC and the NCS with ensuring the information security and network reliability of the NII. The Administration requested that the NSTAC coordinate with and complement the efforts of the U.S. Advisory Council on the NII. The Administration also requested that the NCS continue its efforts with industry in reducing the vulnerability of the Nation's telecommunications systems to accidents, sabotage, natural disasters, or military attack, and coordinate resolutions of these vulnerabilities with the IITF.

To address NII NS/EP issues, and in advance of the Administration's request, the NSTAC IES established an NII Task Force in August 1993. The task force is charged to examine potential NS/EP implications concerning the NII and recommend Government actions in the areas of security, resiliency, interoperability, standards, frequency spectrum availability, and NII dual-use applications.

Prior to the Administration's request, during an NCS Vision 21 off-site meeting in July 1993, the COP approved the establishment of MFA VI (NII). The objective of MFA VI is to "Ensure that the NII can support the conduct of NS/EP activities of Federal, State, and local governments and supporting organizations. The intent is to work through existing interagency groups supporting the NII to ensure that the policies and technical recommendations for the NII include the necessary support for NS/EP activities."

Status

Over the next year, the Administration's IITF will be working together with interagency committees to identify telecommunications and information policies that need to be revised, written, or implemented to accelerate the rapid deployment of an advanced computer and communications infrastructure. The U.S. Advisory Council on the NII will continue to facilitate private sector input to the IITF.

The IITF Telecommunications Policy Committee's RVWG, chaired by the Deputy Director, DISA, is a key working group in which NS/EP concerns are being addressed. Its NS/EP

Subgroup is working to establish an approved set of NII NS/EP capabilities and functions, recommend necessary Government policy and legislation to support the NS/EP capabilities and functions, influence Government agencies' acquisition guidelines to ensure support for NS/EP and interoperability, and ensure adequate industry and Government coordination mechanisms exist for applications to NII NS/EP issues.

The NSTAC NIITF is preparing a status report to the President on key security considerations that need to be addressed in the evolving NII, dual-use applications development, and NII architectural principles and trends, along with the NS/EP performance of portions of the NII.

MFA VI is continuing to monitor and participate in the NII initiative. Currently, MFA VI is researching NS/EP applications, services, and features that should be included during development of the NII, and it will submit its recommendations to the IITF. This effort includes the development and coordination of an NII Capabilities Survey that was distributed to and completed by the 23 NCS member organizations. MFA VI will brief the COP/COR regularly on the status of the NII to ensure that COP/COR members are educated on NII issues and developments.

The NSTAC and NCS will continue to bring NS/EP issues to the attention of the IITF and its advisory bodies, help shape appropriate Government telecommunications and information policies that support NS/EP requirements, and ensure that NII policies and applications incorporate NS/EP requirements to ensure the reliability, security, and interoperability of the NII for both emergency and nonemergency uses. In addition, the NSTAC and NCS, as part of the NII initiative, will continue to assess the evolving telecommunications infrastructure and advise the Government on plans and policies that enhance NS/EP requirements.

TELECOMMUNICATIONS INDUSTRY DEPENDENCE ON FOREIGN SOURCES

Issue

The ability to rapidly mobilize the telecommunications industry is of critical importance for NS/EP planning. Rapid deployment of telecommunications systems is essential for the success of modern military operations such as Operation Desert Storm. Rapid deployment is also required in the aftermath of natural disasters, both in the short-term emergency management phase and the long-term recovery and rebuilding efforts, which may include replacing damaged telecommunications systems. A heavy dependence on foreign sources for finished devices or key components could impede rapid mobilization and deployment under certain NS/EP scenarios.

Background

In FY92, the President's NSTAC directed the NCS to determine the extent to which the U.S. telecommunications industry was dependent on foreign sources for key devices, components, and manufacturing equipment. The NCS tasked two studies to the Institute for Telecommunication Sciences (ITS). One study focused on the Class-5 ESS switch and the other evaluated widely used devices such as semiconductors and optoelectronic devices.

Status

ITS completed the study on the Class-5 ESS switch in FY92 and submitted its findings to the NCS in FY93. The NCS published this study in FY93 as TIB 93-5. A second foreign source dependency study, covering semiconductor and fiber optic devices, was completed by ITS in FY93. ITS submitted its findings to the NCS in FY94. The study was published by the NCS in April 1994 as TIB 94-3.

The study on the Class-5 ESS switch found that there was no foreign source dependence for the finished device. However, several key components for the switch are obtained predominantly or exclusively from foreign sources.

The second study identified a severe foreign source dependence for semiconductor devices used in telecommunications equipment. Should it become necessary to build additional semiconductor manufacturing capacity in the United States due to a disruption of the foreign supply (primarily from Japan), factory equipment is readily available from domestic sources. However, many manufacturing materials are sourced predominately or exclusively from foreign sources.

The study did not identify a foreign source dependence problem for fiber optic cable or related optoeletronic devices. U.S. manufacturers are in a competitive position relative to their Japanese and European competitors in terms of technology, price, and quality. This competitive position is at risk, though, because the U.S. Government invests relatively less on research and development in optoelectronics than do the Japanese and many European governments.

Recommendations

Federal Government efforts should be directed toward minimizing U.S. telecommunications dependence on foreign sources for finished devices or key components. The Government should monitor the rate of technology turnover and the effects on foreign sourcing vulnerability. To make U.S. telecommunications less vulnerable to foreign source dependence, the Government should cooperate with the U.S. telecommunications industry through commercial standards organizations. Finally, NCS Office of Technology and Standards activities should include mitigation of foreign source dependency issues, especially those issues regarding NS/EP telecommunications and the evolving NII.

APPENDIX A
NCS AND OMNCS ORGANIZATIONS

NCS ADMINISTRATIVE STRUCTURE

E.O. 12472 established the NCS as an administrative structure consisting of an Executive Agent, NCS; COP; and Manager, NCS. The Manager, NCS, also serves as the focal point for coordinating the activities of the President's NSTAC. This combined structure facilitates both interagency and joint industry/Government planning (see Exhibit A-1 for an NCS organizational chart).

The role of the Executive Agent, NCS, is to ensure that the NCS conducts unified planning operations in coordinating, developing, implementing, and maintaining effective and responsive communication capabilities that meet the domestic and international NS/EP telecommunications needs of the Federal Government.

The Executive Agent, NCS, designates the Manager of the NCS and ensures that activities of the NCS are conducted in conjunction with the emergency activities of FEMA. Specifically, the Executive Agent, NCS, in consultation with the COP and with approval from the EOP, as appropriate, is responsible for the following:

- Assigning implementation activities or other responsibilities to NCS member organizations
- Developing new NS/EP telecommunications initiatives
- Determining any changes in the composition or structure of the NCS
- Overseeing the activities of and providing personnel and administrative support to the Manager, NCS
- Providing staff support and technical assistance to the President's NSTAC
- Performing such other duties as are from time to time assigned by the President or his authorized designee.

The COP is composed of representatives from 23 Federal departments and agencies. As an interagency group, it serves as a forum for members to review, evaluate, and present views and recommendations on current or prospective NCS plans and programs to the Manager, NCS; the Executive Agent, NCS; and the EOP. The COR was established by the COP as a permanent, subordinate subgroup to assist the COP in researching, developing, and recommending solutions to complex NS/EP telecommunications issues.

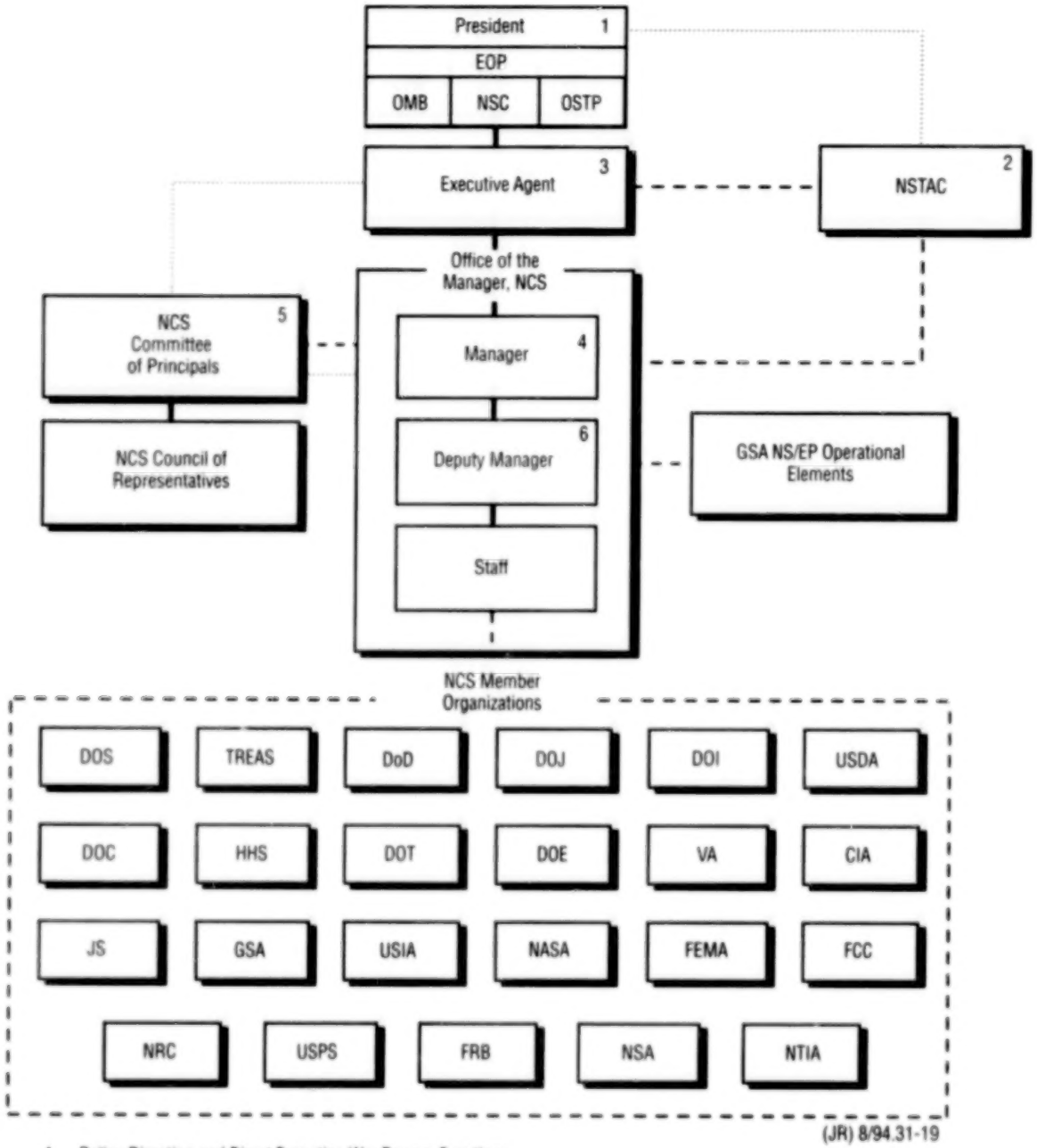
The Manager of the NCS is tasked with the following:

- Developing and recommending an evolutionary NS/EP telecommunications target architecture that overcomes NS/EP telecommunications shortfalls and enhances the NS/EP telecommunications infrastructure
- Identifying NS/EP telecommunications requirements; recommending and planning program enhancements to satisfy identified requirements; implementing approved recommendations that take advantage of new technologies that foster interoperability
- Recommending alternative mechanisms for funding proposed NS/EP programs
- Planning, implementing, administering, and maintaining funded programs and NCS baseline activities.

In addition, the Manager, NCS chairs COP meetings and manages the FTSP.

EXHIBIT A-1

NCS Organizational Chart



(JR) 8/94.31-19

1. Policy Direction and Direct Execution War Powers Functions
2. National Security Telecommunications Advisory Committee
3. Executive Agent, NCS responsibilities assigned to Secretary of Defense by E.O. 12472, April 3, 1984
4. Director, DISA, serves as Manager, NCS
5. The Key Telecommunications Officers of the NCS Member Organizations
6. First line management position which is exclusively NCS

LEGEND:
Direction
Coordination
Advice

OMNCS ADMINISTRATIVE STRUCTURE

OMNCS staff resources are organized into four offices: the Offices of Emergency Preparedness, Joint Secretariat, Plans and Programs, and Technology and Standards (see Exhibit A-2 for an OMNCS organizational chart). The newly established Office of Strategic Planning assists the OMNCS managers and NCS organizations in developing future strategies that ensure the successful accomplishment of the NCS mission. The OMNCS is responsible for the following:

- Providing the expertise for the planning, implementing, administering, and maintenance of approved programs and NCS baseline activities
- Conducting technical studies, analyses, and assessments pertaining to the effectiveness of NS/EP telecommunications programs and the effects of these programs on the national telecommunications/information infrastructure
- Consulting with the COR, COP, and the President's NSTAC on issues pertaining to NS/EP telecommunications
- Participating on Federal councils and boards that develop telecommunications policies, standards, national initiatives, and performing research on emerging technologies
- Monitoring international emergency telecommunications planning activities and offering assistance to international emergency planning groups
- Developing, planning, and implementing NCS strategic goals and objectives
- Assisting individual NCS member organizations in developing efficient cost-effective solutions to complex communication/information requirements and resolutions to organizational communication/information issues.

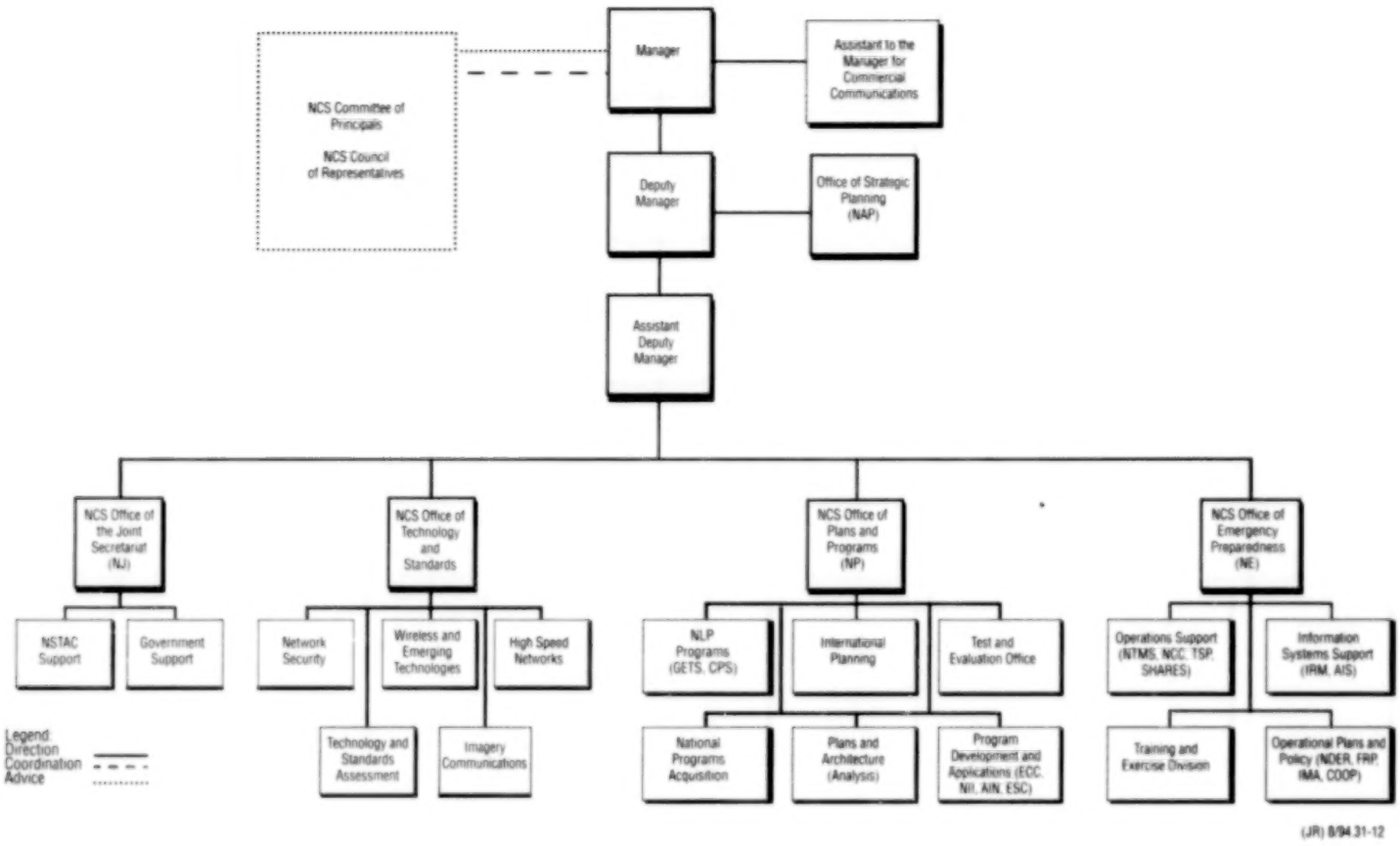
The President's NSTAC was established in September 1982 as a Presidential Advisory Committee. Its purpose is to provide advice and expertise to the President and the Executive Agent, NCS, on issues and problems related to implementing NS/EP telecommunications policy. The NSTAC's IES, and its working groups, task forces, and other subordinate groups analyze NS/EP telecommunications issues, develop recommendations based on analytical findings, and report the results through the NSTAC to the President.

Because the NCS serves as the focal point for joint industry/Government telecommunications planning, the President's NSTAC and NCS have developed a close working partnership. Through this partnership, the NCC, a major joint operational element in coordinating NS/EP telecommunications requirements in any all-hazards situation, continues to execute effective, coordinated responses to the Nation's emergency communication requirements.

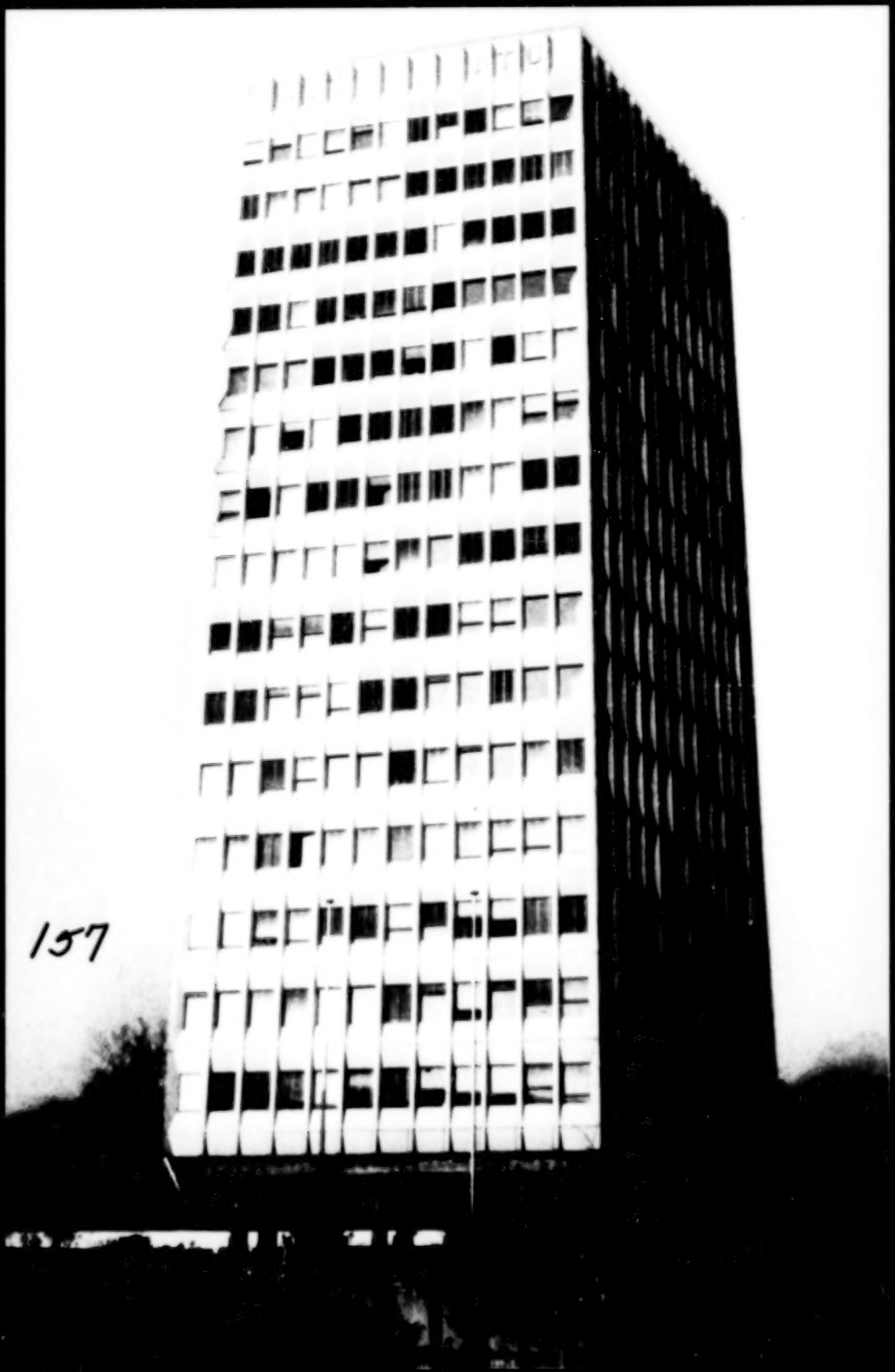
The environment in which the NCS must respond has changed dramatically in recent years, and NCS planning activities and programs are evolving accordingly. The NCS agenda is now increasing its emphasis on emergency preparedness, all-hazards responses to disasters, and communications required to support the Nation's humanitarian assistance and international peacekeeping/building efforts.

EXHIBIT A-2

Office of the Manager, NCS



(JR) 8/94.31-12

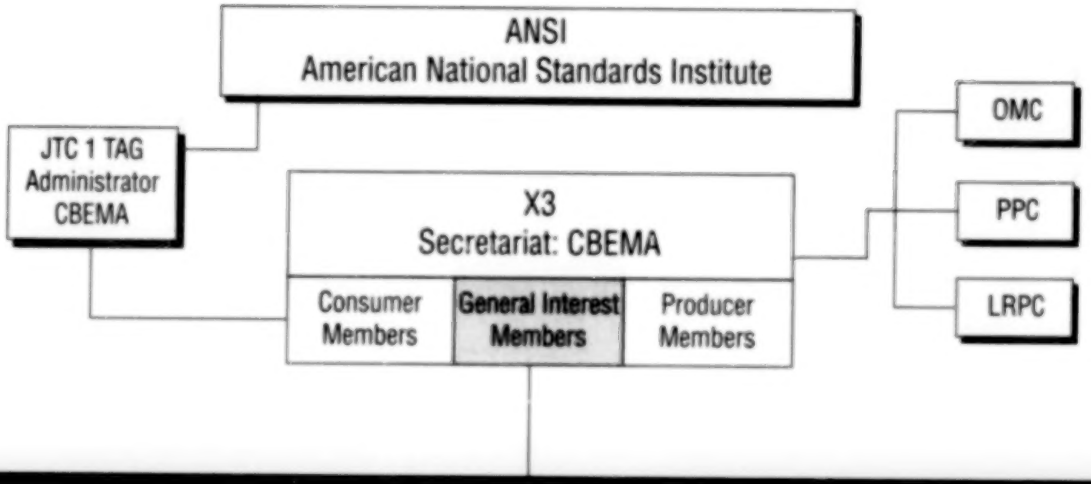


The International Telecommunication Union (ITU) Tower located on the ITU headquarters complex, at Place des Nations, Geneva, Switzerland.

APPENDIX B
TECHNOLOGY AND STANDARDS

EXHIBIT B-1

X3 Organizational Chart



X3 Technical Committees

X3A1	Optical Character Recognition	X3H6	Case Tool Integration Models	X3J16	C++	**X3T4**	**Open Systems Interconnection**
X3B5	Digital Magnetic Tape	X3H7	Object Information Mgmt	X3J17	Prolog	X3T6	Non-Contact Information System Interfaces
X3B6	Instrumentation Tape			X3J18	REXX	X3T7	Internationalization
X3B7	Magnetic Disk	X3J1	PL/I	X3J19	Xbase	X3T8	Fault Isolation
X3B9	Paper/Forms Layout	X3J2	Basic	X3K5	Vocabulary	X3T9	I/O Interface
X3B10	Credit/Identification Cards	X3J3	FORTRAN	X3L2	Codes & Character Sets	X3V1	Text: Office & Publishing Systems
X3B11	Optical Digital Data Disks	X3J4	COBOL	X3L3	Audio/Picture Coding	X3W1	Office Machines
X3H2	Database			X3L8	Data Representation	SC21	TAG-Information Retrieval Transfer, & Management for ISO
X3H3	Computer Graphics	X3J9	PASCAL	**X3S3**	**Data Communications**		
X3H4	Information Resource Dictionary System	X3J10	APL	X3T2	Data Interchange	SC22	TAG-Language
X3H5	Parallel Processing Constructs for High Level Programming Language	X3J11	C	X3T3	Open Distributed Processing		
		X3J12	DIBOL	**X3T4**	**Security Techniques**		
		X3J13	LISP				
		X3J14	FORTH				
		X3J15	DATABUS				

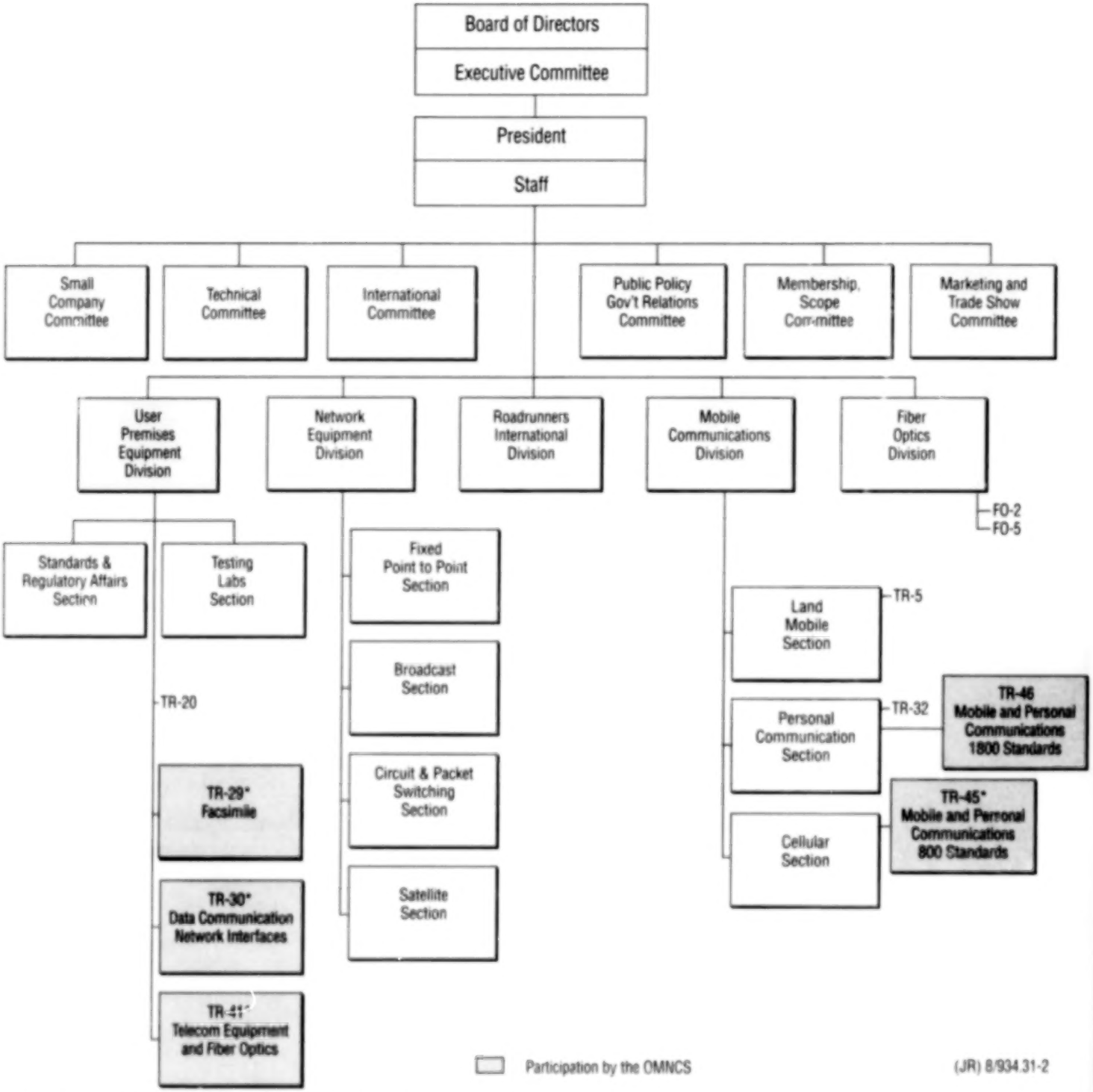
Participation by the OMNCS

(JR) 8/94.31-2

The NCS maintains voting membership in the American National Standards Institution (ANSI)-accredited Committee X3, which develops, reviews, and approves American national standards for information technology. The standards cover interoperability of hardware and portability of software. Committee X3 also develops technical reports and acts as a technical advisory group to the International Organization for Standardization (ISO), which is an international organization that develops standards for goods and services to facilitate international trade and exchange. ANSI is the U.S.'s national standards group that maintains membership in ISO.

EXHIBIT B-2

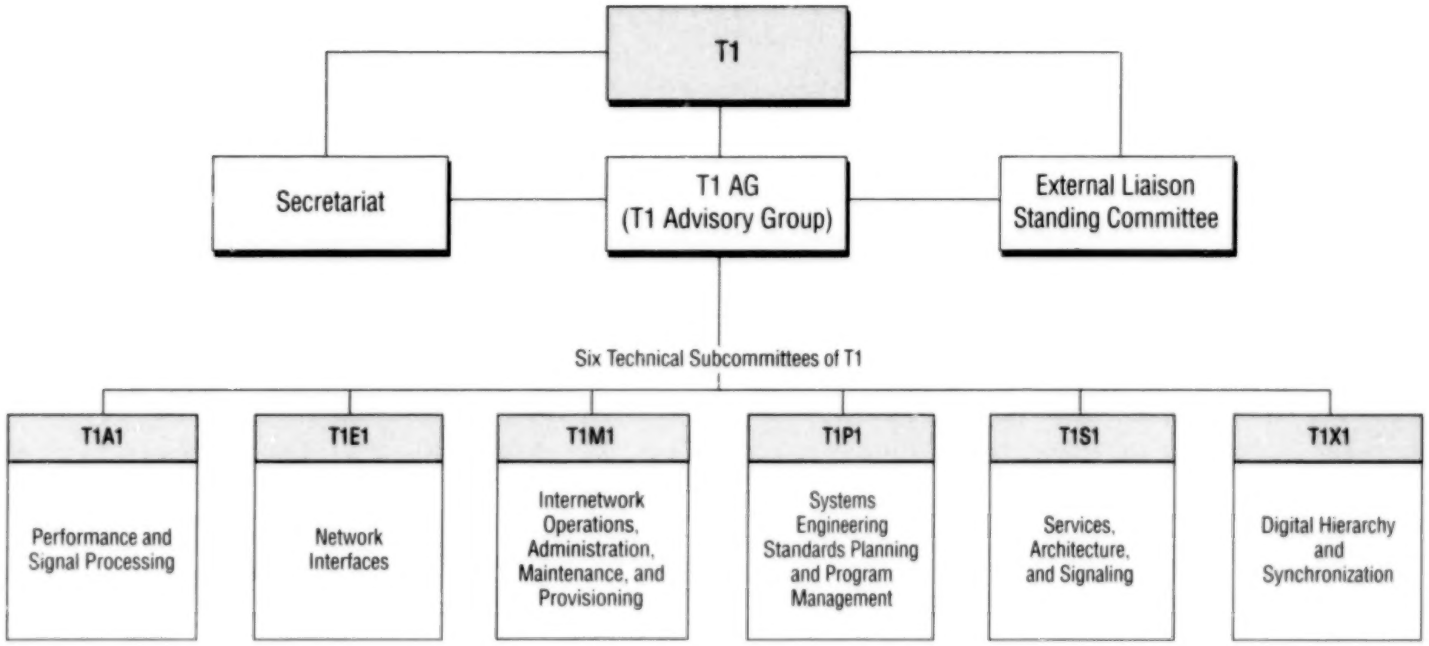
Telecommunications Industry Association Organizational Chart



The TIA plays a key role with respect to the formulation of standards for a number of telecommunications products. TIA was formed in April 1988 when the U.S. Telecommunications Suppliers Association and the Information and Telecommunications Technologies Group of the Electronics Industry Association merged.

EXHIBIT B-3

Structure of Standards Committee T1, Telecommunications (FY94)



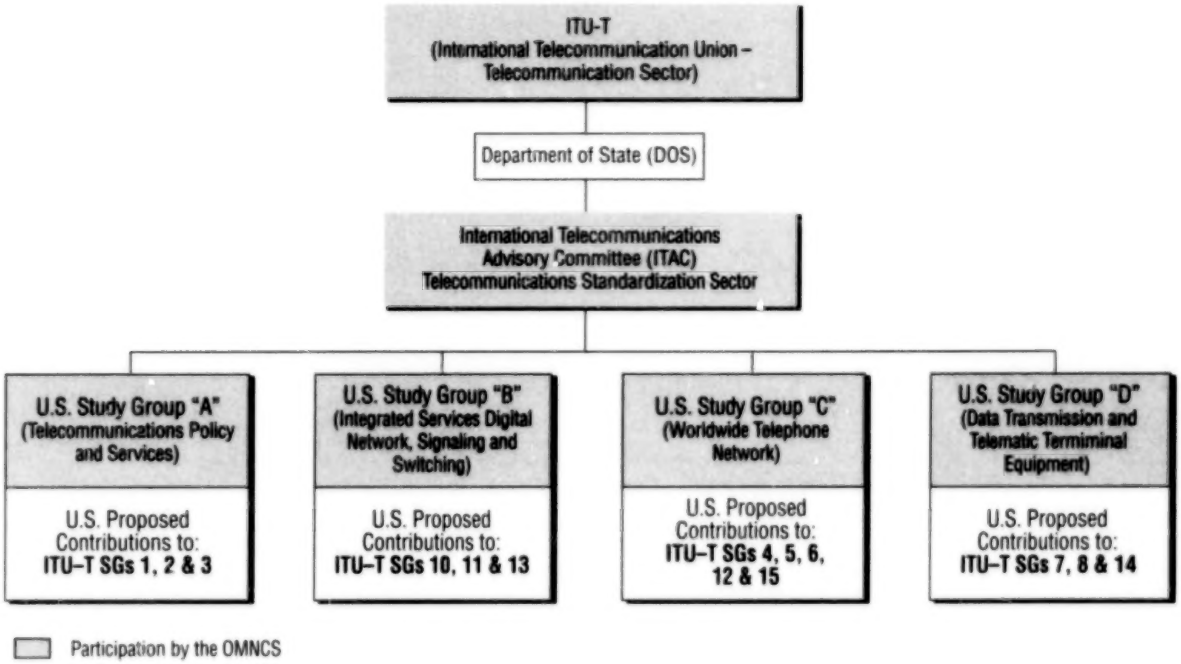
(JR) 8/934.31-2

The NCS maintains voting membership in the ANSI-accredited Committee T1, which develops technical standards for interconnection and interoperability of telecommunications networks. Committee T1 also develops positions for DOS on international proposals. The principal products of Committee T1 are American National Standards and Technical Reports. As of October 1994, these standards and reports total 200. Committee T1's current standards and report development output totals approximately one and one-half per week.

Committee T1 has contributed to several NII/GII programs and remains a prime mover to support these programs. Internationally, T1 recognizes the globalization of the telecommunications market and therefore strives to make T1 products compatible with those of the ITU. Over the past year, approximately 1000 technical papers from T1 technical subcommittees have been accepted as U.S. contributions to ITU bodies.

EXHIBIT B-4 (1 of 3)

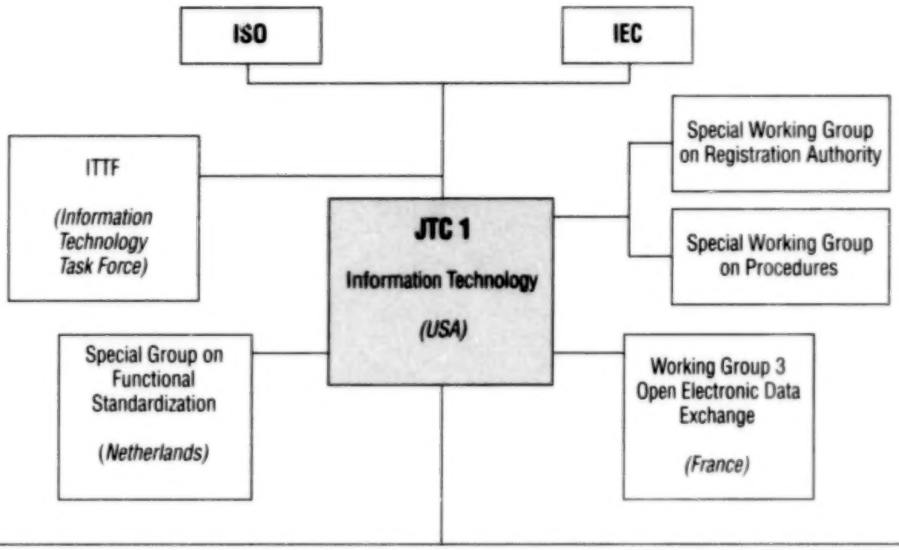
Paths to International Standards Development


ITU-T
(International Telecommunication Union – Telecommunication Sector)
Department of State (DOS)
International Telecommunications Advisory Committee (ITAC) Telecommunications Standardization Sector
U.S. Study Group "A" (Telecommunications Policy and Services)
U.S. Proposed Contributions to: ITU–T SGs 1, 2 & 3
U.S. Study Group "B" (Integrated Services Digital Network, Signaling and Switching)
U.S. Proposed Contributions to: ITU–T SGs 10, 11 & 13
U.S. Study Group "C" (Worldwide Telephone Network)
U.S. Proposed Contributions to: ITU–T SGs 4, 5, 6, 12 & 15
U.S. Study Group "D" (Data Transmission and Telematic Terminal Equipment)
U.S. Proposed Contributions to: ITU–T SGs 7, 8 & 14
Participation by the OMNCS

This exhibit illustrates the path U.S. standards proposals travel to obtain ITU consideration. In general, the ITAC advises DOS with strategic planning recommendations on telecommunications and information policy matters that relate to U.S. participation in the functions of international telecommunications treaty organizations. The ITAC develops and coordinates proposed contributions to international meetings and submits these contributions to DOS for consideration and disposition.

EXHIBIT B-4 (2 of 3)

Paths to International Standards Development



SC1	Vocabulary *(France)*	**SC21**	**Information Retrieved, Transfer and Management of OSI (USA)**
SC2	Character Sets and Information Coding *(Switzerland)*	SC22	Languages *(Canada)*
SC6	Telecommunications and Information Exchange Between Systems *(USA)*	SC23	Optical Disk Cartridges for Information Interchange *(Japan)*
SC7	Software Development and System Documentation *(Canada)*	SC24	Computer Graphics *(Germany)*
SC11	Flexible Magnetic Media for Digital Data Interchange *(USA)*	SC25	Interconnection of IT Equipment *(Germany)*
SC14	Representation of Data Elements *(Sweden)*	SC26	Microprocessor Systems *(Japan)*
SC15	Labeling and File Structure *(Japan)*	**SC27**	**IT Security Techniques (Germany)**
SC17	Identification Cards and Related Devices *(United Kingdom)*	SC28	Office Equipment *(Switzerland)*
SC18	Documentation Processing and Related Communication *(USA)*	SC29	Coded Representation of Picture, Audio and Multimedia/ Hypermedia Information *(Japan)*

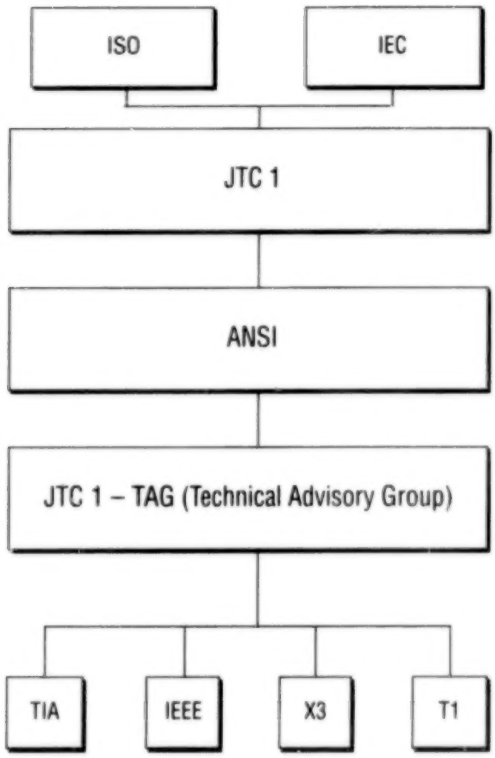
Note: 1. Country listings designate Secretariat responsibilities.
2. JTC 1 focuses on information technologies of interest to both ISO and the IEC.

☐ Participation by the OMNCS

(JR) 8/94.31-2

EXHIBIT B-4 (3 of 3)

Paths to International Standards Development



(JR) 8/94.31-2

ANSI serves as the U.S. member body representative to the international JTC 1 of the ISO and the International Electrotechnical Commission (IEC). The U.S. JTC 1-Technical Advisory Group (TAG) formulates U.S. positions to the international JTC 1, with appropriate information from four key U.S. standards organizations.

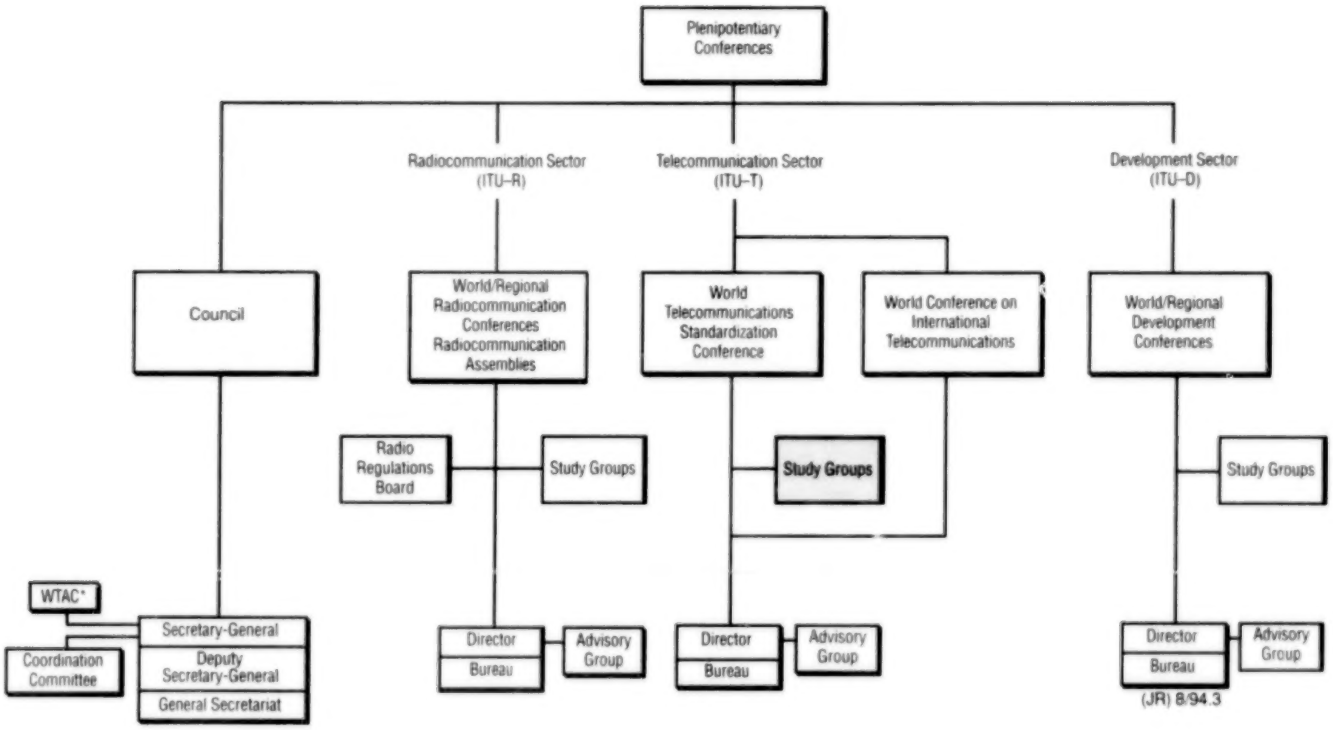
The JTC 1 was created in 1987 by unanimous agreement of the ISO and IEC councils. This committee addresses standardization in the field of information technology.

The ISO develops international standards for goods and services to facilitate international trade and exchange. In 1978, ISO developed the Open Systems Interconnection (OSI) model for the logical structure of networked data communications equipment. The model provides a basis for open systems interconnection, i.e., a network where control resides in various nodes of the network, which operates according to common standards.

The IEC promotes international cooperation and understanding on questions of standardization. The IEC's charter encompasses electronics, magnetics, electromagnetics, fiber optics, electroacoustics, terminology, symbols, measurements, design, safety, durability, and performance.

EXHIBIT B-5

Structure of the International Telecommunication Union



Telecommunication Sector Study Groups

TS Study Group	Title
1	**Service Description**
2	Network Operation
3	Tariff and Accounting Principles
4	**Network Maintenance**
5	Protection Against Electromagnetic Environment Effects
6	Outside Plant
7	**Data Network and Open System Communications**
8	**Terminal Equipment and Protocols for Telematic Services**
9	Television and Sound Transmission
10	Languages for Telecommunication Applications
11	**Switching and Signaling**
12	End-to-End Transmission Performance
13	**General Network Aspects**
14	**Modems and Transmission Techniques for Data, Telegraph, and Service Telematic Services**
15	**Transmission Systems and Equipment Description**

☐ Participation by the OMNCS *World Telecommunications Advisory Council

The ITU, headquartered in Geneva, Switzerland, was created in 1865. In 1947, the ITU became a specialized agency of the United Nations. Today, this agency develops international telecommunications standards called Recommendations, which stem from studies of questions in three key telecommunications subject areas: technical, operational, and tariff. These Recommendations promote the interconnection of telecommunications systems on a worldwide scale. The ITU also supports the advancement of telecommunications in developing countries.

EXHIBIT B-6

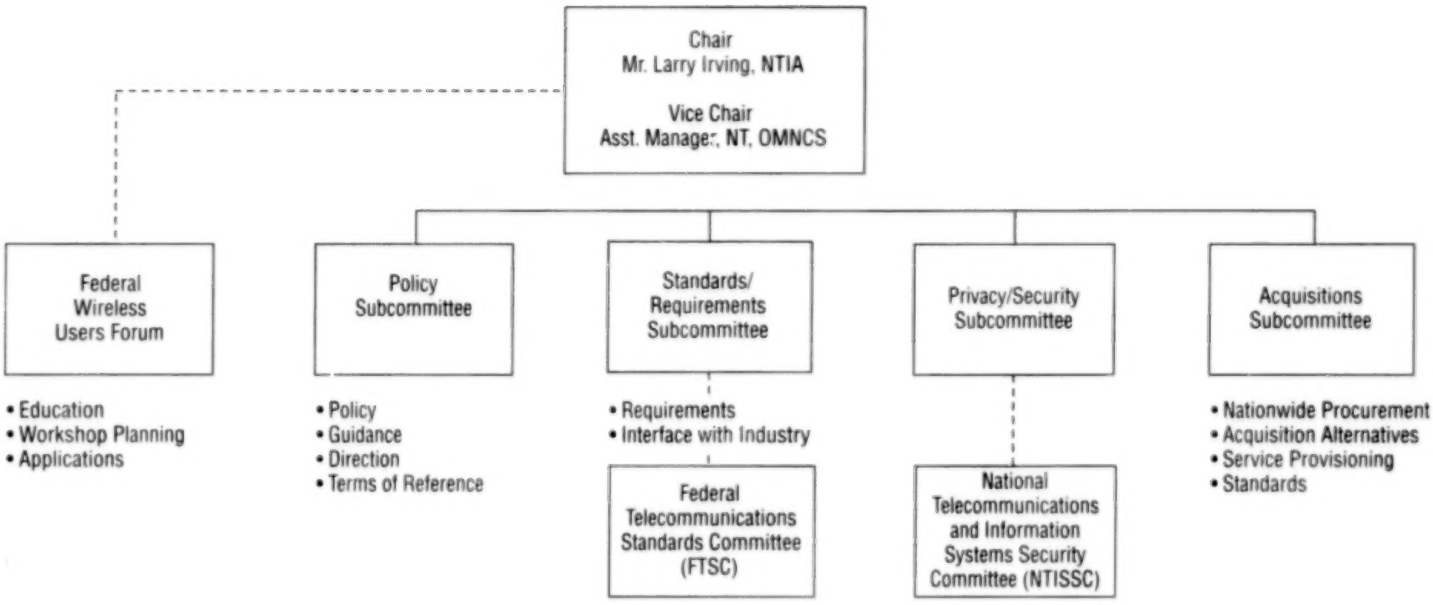
List of FY94 Technical Information Bulletins and Technical Notes

Technical Information Bulletins		
TB Number	TB Title	Publication Date
93-13	Transporting Video Teleconferencing Traffic	Dec 1993
93-14	Investigation of High Definition Television for Application to Government Teleconferencing	Dec 1993
93-15	Scanned Images	Dec 1993
93-16	Security and Facsimile	Dec 1993
93-17	Color Facsimile	Dec 1993
94-1	Baseline Standards for Protection of Telecommunication Links from Radiation Effects	Jan 1994
94-2	Network-Level EMP Effects Evaluation on the Primary PSN Toll-Level Networks **Supersedes TIB 93-11**	Jan 1994
94-3	An Assessment of the U.S. Telecommunications Industry Dependence on Foreign Sources as it Impacts the U.S. Telecommunications Infrastructure **Supersedes TIB 93-5**	Apr 1994

Technical Notes		
Tech Note Number	Tech Note Title	Publication Date
Vol. 2 No. 1	Standards Setting for Building Wiring	Feb 1994
Vol. 2 No. 2	The Federal Wireless Policy Committee	Apr 1994
Vol. 2 No. 3	An Overview of B-ISDN from the ATM Perspective	Sept 1994

EXHIBIT B-7

Federal Wireless Policy Committee



Committee Membership:

- Agriculture
- Commerce
- Defense
- Education
- Energy
- Health and Human Services
- Housing and Urban Development
- Interior
- Justice
- Labor
- State
- Transportation
- Treasury
- Veterans Affairs
- Environmental Protection Agency
- General Services Administration
- Office of Management and Budget
- Office of Science and Technology Policy
- National Communications System
- Federal Emergency Management Agency
- National Aeronautics and Space Administration
- Associated Public Safety Communications Office*
- National Association of State Telecommunications Directors*
- Federal Communications Commission**
- National Security Agency**
- National Security Council**

KEY

——— Direction

- - - - - - Advisory

*Liaison Member
**Non-voting Member

(JR) 8/94.31-3

The Federal Wireless Policy Committee (FWPC) has four subcommittees that facilitate development of Federal Government wireless communication policy.

EXHIBIT B-8

Federal Telecommunication Standards Status List

Number	Title	Publication Date
FED STD 1045A	High Frequency (HF) Radio Automatic Link Establishment Mil-STD-188-141A	18 Oct 93
FED STD 1046 Sect 1	HF Radio Automatic Networking Basic Networking-ALE Controller Mil-STD-188-141 & Mil-Std-187-721	18 Oct 93
FED STD 1049 Sect 1	HF Radio Automatic Operation in Stressed Environment, Linking Protection Mil-STD 187-721 & Mil-STD-187-110	26 Jul 93
FED STD 1055	Interoperability Requirements for Meteor Burst Communications Between Conventional Master & Remote Stations	13 May 94
FED STD 1056	Interoperability Requirements for Encryption of Meteor Burst Communications	13 May 94
FED STD 1057	Interoperability Requirements for Meteor Burst Communications Between Conventional Internetwork Gateway Master Stations	13 May 94
FIPS Project # 1094 FIPS Pub 187	Administrative Standard for Telecommunications Infrastructure of Commercial Buildings – EIA/TIA 606	11 Aug 94

EXHIBIT B-9

Family of Telecommunications Infrastructure Standards for User Premises

NCS Project No	Title	Status
1090	Federal Building Telecommunications Wiring Standards – EIA 568	21 Aug 92 FIPS PUB 174 (Being Revised)
1091	Building Standard for Telecommunications Pathways and Spaces – EIA 569	21 Aug 92 FIPS PUB 175 (Being Revised)
1092	Residential & Light Commercial Telecommunications Wiring Standard – EIA 570	21 Aug 92 FIPS PUB 176 (Being Revised)
1093	Grounding & Bonding Requirements for Telecommunications & Federal Buildings	Working Stage
1094	Administrative Standard for Telecommunications Infrastructure of Commercial Buildings – EIA/TIA 606	11 Aug 94 FIPS PUB 187
1095	Backbone Wiring TIA PN 2416	Under Development

EXHIBIT B-10

Interim Land Mobile Radio Telecommunications Standards

FED–STD	Standard Name
001101	Project 25 System and Standards
001102	Project 25 Common Air Interface
001104	Project 25 Encryption
001107	Project 25 Transceiver Performance
001108	Project 25 Vocoder

EXHIBIT B-11

Federal Standards on Meteor Burst Communications

FED-STD-1055–Telecommunications: Interoperability Requirements for Meteor Burst Radio Communications Between Conventional Master and Remote Stations
FED-STD-1056–Telecommunications: Interoperability Requirements for the Encryption of Meteor Burst Radio Communications
FED-STD-1057–Telecommunications: Interoperability Requirements for Meteor Burst Radio Communications Between Conventional Master Stations

(JR) 8/94.31-25

EXHIBIT B-12

Table of Letter Ballots

	ATIS Committee	Number of Standard Letter Ballots Processed by the OMNCS
	JTC 1-TAG	299
	T1	67
*	T1A1	24
*	TIE1	10
*	T1M1	12
*	T1P1	5
*	T1S1	12
	X3	116
	X3 Subcommittees	9
	Total	554

* Denotes T1 Technical Subcommittees

NCS-RELATED ACRONYMS

A

AA/OSC	Associate Administrator for Office of Space Communications
ACP	Allied Communication Publication
ACTS	Advanced Communications Technology Satellite
ADP	Automated Data Processing
AFB	Air Force Base
AFCEA	Armed Forces Communications And Electronics Association
AFSMS	Automated Federal Spectrum Management System
AIN	Advanced Intelligent Network
AISWG	Automated Information Systems Working Group
AIS	Automated Information Security
ALE	Automatic Link Establishment
AMBC	Advanced MBC
AMSC	American Mobile Satellite Corporation
AMT	ACTS Mobile Terminal
ANSI	American National Standards Institute
APCO	Associated Public-Safety Communications Officers
ARC	Ames Research Center
ARTCC	Air Route Traffic Control Centers
ASC	AUTODIN Switching Center
ASCII	American Standard Code for Information Interexchange
ASD	Assistant Secretary of Defense
ASP	Aggregated Services Procurement
ATIS	Alliance for Telecommunications Industry Solutions
ATM	Asynchronous Transfer Mode
AUTODIN	Automatic Digital Network
AWG	Acquisition Working Group

B

B-ISDN	Broadband ISDN
BBS	Bulletin Board System
BOC	Bell Operating Company
BXA	Bureau of Export Administration

C

C2	Command and Control
C3	Command, Control, and Communications
C3I	Command, Control, Communications, and Intelligence
C4	Command, Control, Communications, and Computers
C4I	Command, Control, Communications, Computers, and Intelligence
CAMS	Communications Area Master Station
CAP	Civil Air Patrol Competitive Access Provider Component Approval Process
CCEB	Combined Communications Electronics Board
CCF	Combined Computer Facility
CCPC	Civil Communications Planning Committee
CCPCWG	Civil Communications Planning Committee Working Group
CCS	Common Channel Signaling Communications Control Software
CD	Compact Disc
CDMA	Code Division Multiple Access
CDN	Consolidated Data Network
CDRG	Catastrophic Disaster Response Group
CFG	Communications Focus Groups
CIA	Central Intelligence Agency
CINC	Commander-in-Chief
CMX	Communications Management Exercise
CNS	Commercial Network Survivability
COMMSTA	Communication Station
COMMSYS	Communication System
COMSEC	Communications Security
CON21WG	Consolidation 21 Working Group
CONUS	Continental United States
COOP	Continuity of Operations Plan
COP	Committee of Principals
COR	Council of Representatives
COTS	Commercial Off-The-Shelf
CPC	Central Processing Center
CPS	Cellular Priority Service
CRIS	Communications Resource Information Sharing

CSI	Commercial SATCOM Interconnectivity
CTIA	Cellular Telecommunications Industry Association
CUDIXS	Common User Digital Information Exchange System
CVTS	Compressed Video Transmission Service

D

DAC	Disaster Assistance Center
DAMA	Demand Assigned Multiple Access
DART	Disaster Assistance and Rescue Team
DBMSWG	Data Base Management System Working Group
DCC	Data Communications Channel
DCS	Defense Communications System
DCTN	Defense Commercial Telecommunications Network
DEA	Drug Enforcement Administration
DEB	Digital European Backbone
DES	Data Encryption Standard
DFO	Disaster Field Office
DHHS	Department of Health and Human Services
DII	Defense Information Infrastructure
DISA	Defense Information Systems Agency
DISANet	Defense Information Systems Agency Network
DISN	Defense Information System Network
DMIP	DCS Mediterranean Improvement Program
DMS	Defense Message System
DOC	Department of Commerce
DoD	Department of Defense
DOE	Department of Energy
DOI	Department of the Interior
DOINET	DOI Network
DOJ	Department of Justice
DOS	Department of State Disk Operating System
DOT	Department of Transportation
DoTCC	Department of Transportation Computer Center
DSC	Digital Selective Calling
DSCS	Defense Satellite Communications System
DSIR	DCS Spain Italy Reconfiguration
DSN	Defense Switched Network
DSNET	Defense Service Network
DTD	Data Transfer Device
DTS	Digital Telecommunications System Dedicated Transmission Service

E

E-Mail	Electronic Mail
E-RTNR	Enhanced Real-Time Network Routing
E.O.	Executive Order
EA	Economic Affairs
EAN	Emergency Action Notification
EBS	Emergency Broadcast System
ECC	Enhanced Call Completion
ECCRN	Emergency Command Control Radio Network
ECS	Emergency Communications System
EDPBX	Electronic Digital PBX
EEF	Essential Emergency Functions
EENET	Emergency Education Network
EIC	International Electrotechnical Commission
EICC	Emergency Information Coordination Center
EIS/Win	Emergency Information System for Microsoft Windows
EKMS	Electronic Key Management System
EKTS	Electronic Key Telephone System
EMPAT	Electronic Mail Process Action Team
EOC	Emergency Operations Center
EOP	Executive Office of the President
EOS	Office of Emergency Services
EOT	Emergency Operations Team
EPA	Early Post-Attack
ERP	Emergency Readiness Plan
ERT	Emergency Response Team
ESA	Economic and Statistics Administration
ESC	Enhanced Satellite Capability Earthquake Service Centers
ESF	Emergency Support Function
ESS	Enhanced Satellite Studies Electronic Switching System
EST	Emergency Support Team
ETN	Electronic Tandem Network

F

FAA	Federal Aviation Administration
FAATSAT	FAA Telecommunications Satellite
FBI	Federal Bureau of Investigation
FCC	Federal Communications Commission
FCO	Federal Coordinating Official
FECC	Federal Emergency Communications Coordinator
FED STD	Federal Standard

FEMA	Federal Emergency Management Agency
FESC	Federal Emergency Support Capability
FEMA	Emergency Support Capability
FET	Field Effect Transistors
FFARS	FEMA Facsimile Record System
FFMS	FEMA Frequency Management System
FHWA	Federal Highway Administration
FIPS	Federal Information Processing Standards
FIRMR	Federal Information Resource Management Regulation
FLEWUG	Federal Law Enforcement Wireless Users Group
FNAMS	FEMA National Automated Message System
FNARS	FEMA National Radio System
FOC	Full Operational Capability
FRB	Federal Reserve Board
FRC	Federal Regional Centers
FRP	Federal Response Plan
FRWG	Funding and Regulatory Working Group
FRX	Frame Relay Exchange
FSN	FEMA Switched Network
FSTS	Federal Secure Telephone System
FTA	Federal Transit Administration
FTP	File Transfer Protocol
FTS2000	Federal Telecommunications System 2000
FTSC	Federal Telecommunication Standards Committee
FTSP	Federal Telecommunication Standards Program
FWPC	Federal Wireless Policy Committee
FWUF	Federal Wireless Users Forum
FY	Fiscal Year

G

G-OTT	C4I and Sensors Staff
G-PRF	Commandant
G-T	Office of C3, USCG
G-TTM	Telecommunications Management Division
GaN	Gallium Nitride
GETS	Government Emergency Telecommunications Service
GIS	Geographic Information System
GITS	Government Information Technology Service
GMDSS	Global Maritime Distress and Safety System
GNSS	Government Network Security Subgroup
GOSIP	Government Open Systems Interconnection Profile
GSA	General Services Administration

H

HAWS	Hawaii Area Wideband Service
HDTV	High Definition Television
HF	High Frequency
HHS	Department of Health and Human Services
HPCC	High Probability of Call Completion
HPC	High Performance Computing
HSFB	High Speed Fleet Broadcast

I

IC	Integration Contractor
IDCU	Integrated Data Communications Utility
IDDD	International Direct Distance Dialing
IDNX	Integrated Digital Network Exchange
IDS	Information Display System
IEC	Interexchange Carrier International Electrotechnical Commission
IEEE	Institute of Electrical and Electronic Engineers International Electrotechnical Commission
IES	Industry Executive Subcommittee
IFA	Interagency Funding Agreement
IITF	Information Infrastructure Task Force
IMA	Individual Mobilization Augmentee
IMC	Interagency Management Council
IMO	International Maritime Organization
INEL	Idaho National Engineering Laboratory
INFOSEC	Information Systems Security
INMARSAT	International Maritime Satellite
INS	Immigration and Naturalization Service
IOC	Initial Operational Capability
IRAC	Interdepartment Radio Advisory Committee
IRM	Information Resources Management
IRMS	Information Resources Management Service
IRT	Initial Response Team
ISDN	Integrated Services Digital Network

IS	Information System
ISO	International Organization for Standardization
ISPG	Information Security Policy Group
ISWG	Information Systems Work Group
ISSA	Inter-Service Support Agreement
ITA	International Trade Administration
ITAC	International Telecommunications Advisory Committee
ITS	Inventory Tracking System Institute for Telecommunications Services
ITT&C	Interoperable, Telemetry, Tracking, and Control
ITU	International Telecommunications Union

J

J-6	Command, Control, Communications, Computers Directorate
JCS	Joint Chiefs of Staff
JPL	Jet Propulsion Laboratory
JRSC	Jam Resistant Secure Communications
JS	Joint Staff
JTC	Joint Technical Committee

K

Ka	Higher Frequency
Kbps	Kilobits per second
kHz	Kilohertz
KP	Key Processors

L

LAN	Local Area Network
LATA	Local Access and Transport Area
LAW	Local Authority Workstation
LC	Limited Capability
LCM	Life Cycle Management
LEC	Local Exchange Carrier
LEO	Low Earth Orbit
LeRC	Lewis Research Center
LINCSL	Leased Interfacility NAS Communications System
LMD	Local Management Devices
LMR	Land Mobile Radio
LMS	Location and Monitoring Services
LOS	Line-of-Sight
LTA	Late Trans-Attack

M

MAR	Mission Area Review
MARAD	U.S. Maritime Administration
MARS	Military Affiliate Radio System
MATTS	Mobile Air Transportation Telecommunications System
MBC	Meteor Burst Communications
MDT	Message Distribution Terminal
MERCOMMS	U.S. Navy/Merchant Marine Communications
MERS	Mobile Emergency Response Support
MF	Medium Frequency
MFA	Major Focus Area
MFJ	Modified Final Judgment
MHz	Megahertz
MIS	Management Information System
MISSI	Multilevel Information System Security Initiative
MKT	Mobile Ku-band Truck
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MRV	Multi-Radio Van
MSE	Mobile Subscriber Equipment
MSS	Mobile Satellite System
MTT	Mobile/Transportable Telecommunications

N

NAOC	National Airborne Operations Center
NARA	National Archives and Records Administration
NAS	National Airspace System
NASA	National Aeronautics and Space Administration
Nascom	NASA Operational Communications System
NATO	North Atlantic Treaty Organization
NAVMACS	Naval Modular Automated Communications System
NAWAS	National Warning System
NCC	National Coordinating Center for Telecommunications Network Control Center
NCS	National Communications System
NCSD	National Communications System Directive
NCSH	National Communications System Handbook
NCSM	National Communications System Manual
NDDA	Natural Disaster Damage Assessment
NDER	National Defense Executive Reserve
NDMS	National Disaster Medical System
NECC	National Emergency Coordinating Center

NECN	National Emergency Coordination Net
NEMT	National Emergency Management Team
NENA	National Emergency Numbers Association
NESDIS	National Environmental Satellite Data and Information Service
NET	Network Equipment Technology
NETC	National Emergency Training Center
NII	National Information Infrastructure
NIITF	NII Task Force
NIST	National Institute of Standards and Technology
NKDS	Navy Key Distribution System
NLP	National Level NS/EP Telecommunications Program
NMFS	National Marine Fisheries Program
NNOC	National Network Operations Center
NOAA	National Oceanic and Atmospheric Administration
NOF	Network Operations Forum
NOS	National Oceanic Service
NPA	Numbering Plan Area
NRC	Network Reliability Council Nuclear Regulatory Commission
NRCOC	Nuclear Regulatory Commission Operations Center
NRSC	Network Reliability Steering Committee
NS/EP	National Security and Emergency Preparedness
NSA	National Security Agency
NSC	National Security Council
NSCA	National Center for Super Computing Applications
NSDD	National Security Decision Directive
NSIE	Network Security Information Exchange
NSM	Network Security Management
NSSC	Network Security Steering Committee
NSSOG	Network Security Standards Oversight Group
NSTAC	National Security Telecommunications Advisory Committee
NSTF	Network Security Task Force
NSTISSC	National Security Telecommunications and Information Systems Security Committee
NTCN	National Telecommunications Coordinating Network
NTIA	National Telecommunications and Information Administration
NTMS	National Telecommunications Management Structure
NTS	NCS Transportable System
NTTC	National Transportable Telecommunications Capability
NWS	National Weather Service

O

O&O	Organization and Operations
OAR	Oceanic and Atmospheric Research
OASDPO	Office of the Assistant Secretary of Defense
OC	Operating Center
OCIO	Office of Chief Information Officer
OCONUS	Outside Continental United States
OIRM	Office of IRM
OIS	Operational Information System
OMB	Office of Management and Budget
OMNCS	Office of the Manager, National Communications System
OSC	Office of Space Communications
OSD	Office of the Secretary of Defense Operations Support Directorate
OSI	Open Systems Interconnection
OSTP	Office of Science and Technology Policy
OTAD	Over-the-Air-Distribution
OTM	Office of Telecommunications Management

P

PABX	Private Automatic Branch Exchange
PAC	Pacific
PBX	Private Branch Exchange
PC	Personal Computer
PCC-NSTIS	Policy Coordinating Committee for National Security Telecommunications and Information Systems
PCMCIA	Personal Computer Memory Card International Association
PCS	Personal Communications Services
PDS	Public Domain Server
PEP	Primary Entry Point
PF2K	Post Federal Telecommunications Network 2000
PHS	Public Health Service
PIN	Personal Identification Number
PIC	Primary Interexchange Carrier
PMFPIWG	Property Management Functional Process Improvement Working Group
PMO	Program Management Office

POC	Proof of Concept
POTS	Purchase of Telephone Services
PSC	Public Service Commission
PSCN	Program Support Communications Network
PSN	Public Switched Network
PT&E	Preparedness, Training, and Exercise
PTO	Patents and Trademark Office
PUB	Publication
PUC	Public Utilities Commission
PvDS	Private Domain Server

R

R&D	Research and Development
R&R	Response and Recovery
RBCS	Remote Bar Code Sorting
RBOC	Regional Bell Operating Companies
REMT	Regional Emergency Management Team
RFI	Request for Information
RFP	Request for Proposal
RRF	Ready Reserve Force
RSPA	Research and Special Programs Administration
RVWG	Reliability and Vulnerability Working Group

S

SAIC	Science Applications International Corporation
SARSAT	Search and Rescue Satellite
SATCOM	Satellite Communications
SDI	Switched Digital Integrated Service
SECT	SHARES Emergency Coordination Team
SEMS	SHARES Emergency Management System
SETA	Systems Engineering and Technical Assistance
SHA	State Highway Agencies
SHARES	Shared Resources
SHF	Super High Frequency
SiC	Silicon Carbonate
SIPRNet	Secret Internet Protocol Router Network
SMTP	Simple Mail Transport Protocol
SONET	Synchronous Optical Network
SOW	Statement of Work
SS-4	Selective Signaling Voice Confereacing System
SS7	Signaling System 7
STU	Secure Telephone Unit

T

TA	Technology Administration
TAG	Technical Advisory Group
TAMI	Traffic Analysis by Method of Iteration
TCP/IP	Transmission Control Protocol/ Internet Protocol
TCS	Treasury Communications System
TDRSS	Tracking and Data Relay Satellite System
TDY	Temporary Duty
TEMS	Telecommunications Emergency Management System
TIA	Telecommunications Industry Association
TIB	Technical Information Bulletin
TM&O	Telecommunications Management and Operations
TMN	Telecommunications Management Network
TOPS	Telecommunications Ordering and Pricing System
TQM	Total Quality Management
TREAS	Department of the Treasury
TSA	Technical Support Arrangement
TSAR	Telecommunications Standards Acquisition Resource
TSC	Telecommunications Services Contract
TSP	Telecommunications Service Priority
TSR	Telecommunications Service Request
TSS	Telecommunications Service Staff

U

UHF	Ultra High Frequency
UPT	Universal Personal Telecommunications
USCG	United States Coast Guard
USCINCPAC	United States Pacific Command
USDA	United States Department of Agriculture
USIA	United States Information Agency
USN	United States Navy
USPS	United States Postal Service
UTP	Unshielded Twisted Pair
UWS	Universal Wiring Standard

V

VA	Department of Veteran Affairs
VANTS	VA Nationwide Teleconferencing System
VHF	Very High Frequency

VMWG	Voice Mail Working Group
VOA	Voice of America
VSAT	Very Small Aperture
VTC	Video Teleconferencing

W

WAN	Wide Area Network
WESTHEM	Western Hemisphere
WHCA	White House Communications Agency
WITS	Washington Interagency Telecommunications System
WSDRN	Western Satellite Data Relay Network Worldwide On-Line System

END

05-06-96